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37,500,000 TIRES FOR 1919.

THE total number of passenger automobiles and trucks registered in the United States for the year 1918 was 6,088,169, representing an increase of 1,026,555 cars over 1917, despite the war curtailment of manufacture. Nearly 70 per cent of these new cars were Fords, the Ford output of passenger cars and trucks for the fiscal year ended July 31, 1918, being 706,584 cars. The 1919 Ford campaign calls for an output of 1,000,000 cars, and as other companies contemplate similar increases, the 1919 registration will probably jump at least 1,500,000.

These statistics forecast an American output of some 37,500,000 tires for the year. Assuming five tires per car as the average yearly consumption—four in use and one spare, it will require 30,440,845 tires to operate the cars registered at the end of 1918. The 1919 production of cars will call for 6,000,000 tires as original equipment, and for each of these cars a spare will quickly be bought, thereby adding 1,500,000 to the grand total. It remains only to deduct something for the old cars that may go out of service during the year. This will hardly exceed and probably not equal 440,845 tires, the odd part of the first item, so that 37,500,000 tires may be regarded as a conservative estimate, especially in view of the depleted condition of American tire stocks following the curtailment period.

LIGHTING THE RUBBER FACTORY.

IN this era of superproduction too much attention cannot be paid to the lighting system in a rubber factory. Upon its perfection and scientific arrangement depend the quality of the product, the standard of the output and the efficiency of the employe. In the early days of factories kerosene lamps and open-burner jets were the only sources of artificial light available. Then came the incandescent lamp in 1879, as great a revolution in its way as the gas jet was over the old whale-oil lamp or tallow dip. With the development of the Mazda and other types of lamps came practical perfection.

Wise factory managers now recognize that lighting is not an expense to be minimized, but is a most important aid to economic production and may even become the deciding factor between profit and loss. Here is a typical test to show the relation of light to output.

In a Chicago factory a lighting system using incandescent lamps in deep bowl reflectors, was carefully designed to provide four-foot candles of illumination. The men worked under these conditions for a period. Then the intensity was increased to 12-foot candles, in other words the lighting was trebled. This change was attended by an 8 to 27 per cent increase in production. These figures cover eight different operations, which averaged a 15 per cent increase.

Insurance companies recognize that suitable light is as essential to the safety of employes as any of the safeguards which are applied to belts, pulleys and gears. Codes of lighting have been devised in many states supervised by the Department of Labor for the protection of employes. These bodies have recognized that many accidents may be avoided by proper lighting. The plant operator should ask himself the questions: "Is there artificial illumination in every part of the plant likely to be traversed by workmen? Are all moving parts clearly visible, and are the lights so shielded that a man will not be temporarily blinded and thus not be able to see gears, belts, and other mechanisms?"

Good lighting is furthermore reflected in the faces of the operators, in healthful, buoyant spirits. Bad lighting is irritating because it makes it difficult to see, and the mind unconsciously becomes obsessed with the idea that it is being imposed upon. The experienced and trained man is not easily replaced, and under a bad lighting system he becomes incapacitated at the very time when he should be yielding the best returns.

Of the cost of a modern system an Edison expert says: "Assuming the rate of wage is 25 cents per hour, the power cost is 2 cents per kilowatt-hour, and that a 100-watt Mazda C lamp is provided for each operator, the total cost of operation of this lamp, including renewals and cleaning, would be about 4/10 cent per hour. Therefore, if with this lighting a man can save one minute per

hour, the extra cost of lighting is more than paid for in the saving on labor cost alone."

MR. ROCKEFELLER'S TIMELY CAUTION.

THAT Labor and Capital are partners, not enemies; that their interests are common, not opposed, and that neither can attain the fullest measure of prosperity at the expense of the other, but only in association with the other, is the preamble of a creed contained in a most timely pamphlet entitled "Representation in Industry," just issued by John D. Rockefeller, Jr. Mr. Rockefeller, than whom no employer in this country is better qualified to discuss industrial subjects, strikes at the root of the industrial question when he emphasizes that the Community is an essential party to industry and that it should have adequate representation with the other parties.

It is the purpose of Mr. Rockefeller to show that the four parties to industry—Labor, Capital, the Management and the Community—should be so represented that disputes should be equitably settled, fair wages and reasonable hours assured, capital be justly compensated and management be adequately recognized. He does so in a most convincing manner, and cites the example of the Standard Oil Co. in some of its branches where a system of representation has been adopted which has worked for the good of all concerned and which has minimized the troubles which constantly arise in large concerns.

In a keen, incisive manner, Mr. Rockefeller analyzes the cause of misunderstandings often so disastrous to all concerned and condemns the capitalists "who regard Labor as their legitimate prey," from whom they are justified in getting all they can for as little as may be, equally with the attitude of Labor whose sentiment is to wrest everything possible from Capital. These two forces he declares are to blame for the strike, the lockout and other incidents of industrial warfare. Mr. Rockefeller's system of mutual cooperation and discussion by the four parties interested for the purpose of eliminating these causes for turmoil, which of late seem to be multiplying not only in this country, but elsewhere, is a most valuable contribution and is well worth the perusal of all who want to see progress replace strife, and an era of good feeling succeed the present overcharged atmosphere of discontent and recrimination.

AS TO THE RAINY DAY.

CARTER GLASS, the new Secretary of the Treasury, has inaugurated his term of office with a government campaign to make "Thrift a Happy Habit." This is the title of a booklet issued by the Government to the people of the United States "to promote wise buying, avoidance of waste, intelligent saving, and safe investment, with the aim of meeting war obligations and promoting individual, community, and national prosperity" and "to make earnings and time count more for the individual."

The governors of the 12 Federal Reserve Districts have been requested to develop special savings machinery in each district with the idea of stimulating the sale of Thrift and War Savings Stamps. On the subject of "Every Day Economics" the following pertinent advice is given:

"If the well-to-do would save all they could and furnish the Government with funds by buying bonds and thrift stamps and by paying taxes, and if those with smaller incomes would do likewise, together they might be able to save enough for the use of the Government and at the same time furnish it with funds to buy what they saved. But if many of them, either rich or less well-to-do, refused to do their part they would force others to do more than their share.

"Sane spending is the basis of intelligent saving and elimination of waste," continues Mr. Glass, "whether of commodity or time. In making purchases, the buyer should make certain whether he gets his money's worth in commodity, comfort, service, recreation or advancement.

"Provision must be made for the rainy day and unforeseen emergencies—or opportunities—when they occur. Intelligent saving is diametrically opposed to hoarding or miserliness. It consists largely in foregoing ill-considered or foolish present expenditures in order to be able to obtain in the future necessities or even luxuries."

The purpose of the great campaign is to pay all war bills, maintain our troops and to bring them home, to create a powerful agency for the Americanization of the foreign-born—and to establish a "practical eraser for the hyphen" as well as to afford the greatest benefits to the workers in protection for the future, and providing for a rainy day.

THE INDUSTRIAL BOARD OF THE DEPARTMENT OF COMMERCE is a new creation of great importance. The board in consultation with industrial leaders plans to stabilize prices through governmental purchases of basic materials. It is not price fixing. It is simply a big buyer coming into the market with the cooperation of all other big buyers, sellers and producers. Thus will stagnant business be energized, capital be freed, building operations be resumed and normal industrial activity be restored.

THE DAILY PRESS ANNOUNCES ANOTHER WORLD TOUR OF the yacht *Oneida*, under the personal command of the veteran rubber factor, Commodore E. C. Benedict. It is claimed, by the newspapers, that Commodore Benedict once penetrated to the head waters of the Orinoco in this same sea-going yacht. Not to seem too skeptical we will allow that if any man in the world could negotiate the rapids above Angostura in a big vessel it would likely be the Commodore.

The Production of Guayule Rubber—II.[1]

From a special report by Henry C. Pearson, prepared for the Bureau of Foreign and Domestic Commerce.

HABITAT OF GUAYULE—PARASITIC ENEMIES.

GUAYULE at its best is found growing on the central Mexican plateau in great quantities. The district is nearly rainless and is very sparsely populated by a race partly Indian, partly Spanish. The region is practically grassless and contains no large trees, being a typical desert country. The alkali earth which is found over most of the plateau is in reality a rich soil, needing only sufficient water to make the region a very fertile one.

The guayule is indigenous in a comparatively small area in southwestern Texas and northern Mexico. It may be bounded as follows: from the western extremity of Presidio County, Texas, the line runs somewhat west of south till it reaches the northern boundary of Durango, Mexico, near Santa Barbara, Chihuahua; then southeast parallel with the Mexican Central Railway about 100 kilometers (62 miles). Beyond the State of Durango the boundary runs still farther east curving northward again not far from San Luis Potosi. The one hundred and first meridian marks roughly the eastern boundary, lying somewhat west of it till beyond Saltillo, where the line then curves slightly west of north, reaching the eastern limit in Texas at Langtry. The northern limit is marked approximately by Fort Stockton. The total area is approximately 130,000 square miles, a large part of which is in the Chihuahuan Desert. This area varies in altitude from 2,000 to 10,000 feet above sea level, and the most important acreage is not much above 6,000 to 6,500 feet.

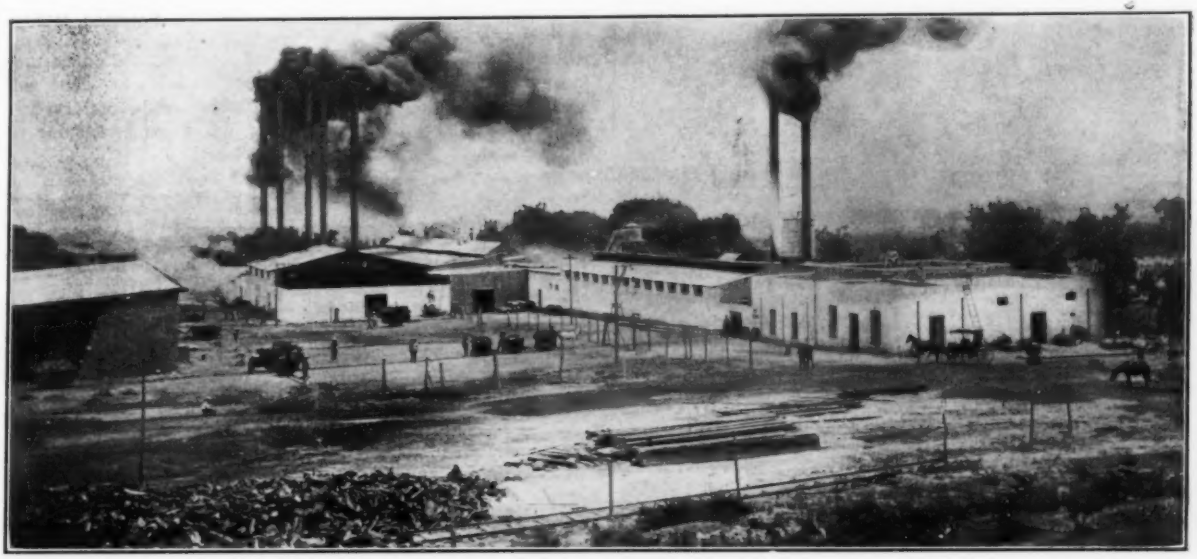
According to Lloyd,[2] guayule has few parasitic enemies, either vegetable or animal. Of the former, two are species of fungi, the *Puccunia parthenii* and the dodder (*Cuscuta* sp.). Of the latter there are Coccidae that attack the tap root. There is also a scale, *Targionia dearnessi* Ckll., which attacks roots. The leaves are sometimes attacked by a gall insect, and there is a bark-boring beetle, the *Pitgophthorus nigricans* Bland.

[1]Continued from THE INDIA RUBBER WORLD, March 1, 1919.
[2]"Guayule, a Plant of the Chihuahuan Desert," page 40.

GATHERING AND TRANSPORTING THE SHRUB.

Although the most important guayule districts command good railway facilities, there are large areas whose exploitation is difficult on account of the lack of means of transportation. These difficulties are mainly due to the fact that water for the pack animals can not be found on these desert lands.

The gathering is done under contract by natives, who simply pull the plant and load it on the back of burros. It is then carried to a central station, where it is baled by ordinary hay balers. These bales are loaded upon large wagons, which are drawn across the desert by teams of mules, often 12 to 14 to the team. The cost of transportating the crude material is not great. A burro driver gathers the loads for two or three animals, each carrying an average load of 165 pounds. For an entire day's journey (12 kilometers and return) and three loads (495 pounds) the transportation charges per ton of crude material would be, say, $2.50 to $3. For long distances, however, the cost sometimes runs as high as $12.50 per ton.



FACTORY OF THE COMPANIA EXPLOTADORA COAHUILENSE, S. A., PARRAS, MEXICO.

PRICES OF SHRUB AND COST OF EXTRACTED RUBBER.

The price of dried guayule plants, including charges, began at $7.50 a ton. Later, when several competing enterprises erected factories, the price rose to $15 and $20 per ton, according to the distance between the places of origin and the station or works. During the "boom" growing guayule was bought unharvested at $30 gold per ton in the field and up to $50 gold per ton delivered at the factory. A fair average of the cost of guayule shrub to the leading concerns was about $30 gold per ton c. i. f. factory, allowing for shrinkage until used, which must be within 60 days of cutting to prevent deterioration of the rubber.

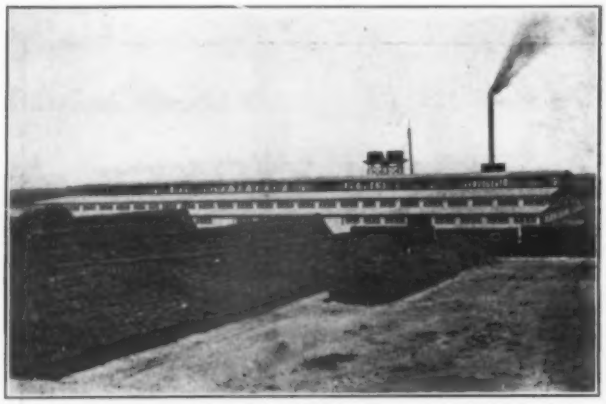
Calculating the high cost of coal and water, it was estimated that the rubber could be extracted and freighted to New York and sold there at a cost of 20 to 25 cents per pound. This included all costs, taxes, traveling options, office expenses, etc., but not royalties on processes used.

ESTIMATING THE SUPPLY OF SHRUB.

The supply of guayule in its territory is very unevenly distributed. In most parts the plants are isolated, growing sometimes in large and often in small numbers among other plants on mountain inclines rich in lime. At rare intervals small spaces are found where it predominates. The following estimate was made by Endlich:

An estimate of the average supply per hectare (2.47 acres) is very difficult to make, both on account of the uneven distribution of the growth and of the great differences in individual plants. In favorable territory I have on several occasions counted 30 to 40 plants to an area of 100 square meters, which would mean a total supply of 3,000 to 4,000 plants per hectare. The differences in size and weight are so great that in places where the plants are small and grow close together 10 plants have only the weight of 1 kilo (2.2 pounds), while in the best territory some of the trees weigh as much as 3 kilos each. The average weight will not exceed 500 grams (1.1 pounds) per plant. Estimates of the guayule supply in large areas vary from 500 to 800 kilos per hectare, but the distances between the different places where the plants are found are often considerable and must be taken into consideration. The territory containing the more important places of supply includes a total area of about 75,000 square kilometers (about 29,000 square miles).

It is even more difficult to approximate the total supply of crude material. Let us assume that in the area of 75,000 square kilometers, comprising the districts where the guayule plant is principally found, one-tenth actually contains a supply; this would mean a territory of 750,000 hectares. If we



CONTINENTAL RUBBER CO., TORREON, MEXICO.

figure the output as one-half ton per hectare, we get a total supply of 375,000 tons, which at the rate of 7 to 10 per cent rubber, represents a total of 26,250 to 37,500 tons of rubber.

In 1906 a number of experts figured on the amount of shrub available for extraction. The following tabulation is based on their estimates and a selling price for crude rubber at 45 cents gold per pound:

Owners of Shrub.	Estimated Yield of Shrub, Metric Tons.	Estimated Yield of Rubber, Metric Tons.	Estimated Profit, Excluding Royalties.
No. 1	57,000	6,840	$3,009,600
No. 2	40,000	4,800	2,112,000
No. 3	10,000	1,200	528,000
No. 4	8,000	960	422,400
No. 5	27,000	3,240	1,425,000
No. 6	8,000	960	422,400
No. 7	3,000	360	158,400
No. 8	35,000	3,000	1,320,000
No. 9	20,000	2,400	1,056,000
No. 10	12,000	1,440	633,600
No. 11	8,000	960	422,400
No. 12 (scattered holdings)	47,000	5,640	2,481,600
Consumed to June, 1906	10,000	1,200	528,000
Permanently unavailable	25,000	.....	.....
Totals	310,000	33,000	$14,519,400

REGROWTH IN WILD AREAS.

In the first collection of the guayule shrub the plant was uprooted. To a certain extent some roots were broken off and formed new growths. If, however, instead of being pulled up the plant is cut off under the surface of the soil, the root that remains will, if rain falls within a reasonable time after the cutting, reproduce a good plant. The self-sown seeds grow slowly, several years showing only a thin one-fourth-pound bush. Natural reproduction in the field therefore takes place in two ways, by seeds and by means of shoots (retones) which start up from the shallow-lying roots. Retones are relatively few in number, but their initial growth is rapid and they quickly produce flowers. Even the remaining portion of roots broken

COMPANIA EXPLOTADORA DE CAUCHO MEXICANO, SALTILLO, MEXICO.

off where the plants are uprooted frequently produce new plants, and this after dying back quite a distance. Thus with reasonable care the existing guayule fields may be preserved.

One of the large operators advised the writer concerning regrowth in these words:

On this point we have had great encouragement, as experiments made from territory cut over some years ago show that there will be a second cut of some size, and if the country is visited by rains we may count on a steady though slow development of this second growth. This can never reach proportions large enough to warrant us in expecting an output anywhere near the yield of 1910, but it will make it possible for some of the factories to maintain a constant if diminished output. From the present outlook and from the experiences gained in the past the rubber trade may count on an annual production indefinitely of somewhat over 2,000 tons. These figures are based on the supposition that the price of guayule will not go below 45 cents nor above 75 cents per pound. If the price should go below 45 cents there will be less guayule produced than the above figures, and if it goes above 75 cents there will be an increase over these figures temporarily, with acceleration of the consumption of the available shrub and the consequent reduction of the future supply. High prices for

SALVADOR MADERO & CO., VANEGAS, MEXICO.

rubber mean high prices for the shrub and a resultant destruction of the young and growing shrub, as anything that appears like guayule will be cut and shipped to the factories by the shrub owners greedy for money.

(To be continued.)

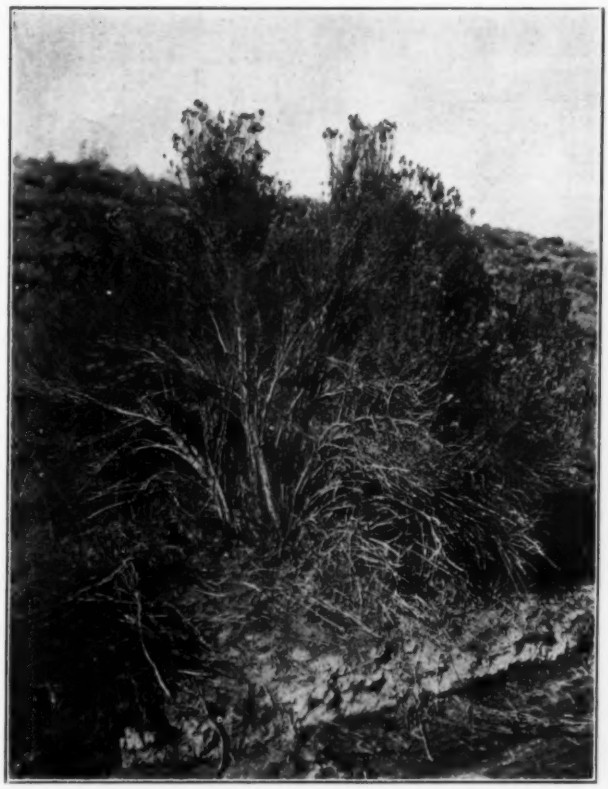
SAMPLES OF CRUDE PLANTATION RUBBER.

The Bureau of Foreign and Domestic Commerce of the United States Department of Commerce has been furnished with samples of crude plantation rubber graded in accordance with the classifications, in use here as follows: unsmoked diamond sheet smoked diamond sheet (light), smoked diamond sheet (dark), unsmoked plain sheet, smoked plain sheet, pale crêpe (variable,) brown crêpe (variable), blanket crêpe (variable). The samples may be examined at the Bureau of Foreign and Domestic Commerce, or its district offices, by referring to file No. 108614.

Chrysothamnus or Sierra Rubber.

WHETHER the United States in the near future is destined to produce its own rubber within its limits in commercial quantities is a problem which still remains to be solved. The investigation which was undertaken by experts of the University of California, shortly after the United States entered the war, and an account of which was printed in THE INDIA RUBBER WORLD June 1, 1918, is still proceeding, but up to date the investigators are of the opinion that it is not possible to obtain rubber commercially from the wild plants which grow so abundantly in the Sierras and in other parts of the West.

Professor H. M. Hall of the University of California, who is in charge of the research work, while declining to go into detail as to the extent of the discoveries until a complete report can be made, is authority for the broad statement that the total amount of wild shrub with a rubber content is "so great that it is safe to say there is enough rubber present to constitute an emergency supply in case we ever get into a war in which our importation would be curtailed, but the extraction of this would be an expensive process, since the average content for the whole West is probably not more than 2½ per cent, and even in the best districts it will not run more than 4 or 5 per cent on the average."



CHRYSOTHAMNUS NAUSEOSUS OR "COMMON GREEN."

Professor Hall is quite certain that rubber cannot be obtained commercially from the wild plants with the price of rubber anywhere near what it now is. In connection with this matter he says: "It is sometimes stated that the plants can be profitably grown. This is entirely within the realm of possibility, and one phase of our work is looking toward investigation in that connection, for it would be impossible to demonstrate at the present time that there would be any profit in growing the plants."

Professor Hall's forthcoming report will contain a comprehensive résumé of the possibilities of the various wild plants of the western regions which are known to contain rubber. There are several of them in unlimited quantities, but the most "interesting sort" as Professor Hall terms it, has been denominated the "Common Green." "This is a variety of the *Chrysothamnus nauseosus*," he continues, "but I cannot give the Latin equivalent for the varietal name at present, since the variety has not been described and it would not be well to use the name ahead of the description. . . . We are finding that this 'common green,' as we call it, averages only about 3 per cent, although individual plants, and some of them very large ones, carry as much as 6 per cent. These figures are for absolutely pure rubber and are based upon dry weight. There are many interesting developments in connection with our studies, but it is not permitted me to speak of these at present."

That the United States may be on the verge of a discovery of the greatest importance to the rubber trade is entirely within the range of possibility, and that a most important beginning has been made is entirely apparent. The fact that the supply is sufficient for an emergency, despite the cost involved in its production, is alone well worth consideration, although the end of the war has rendered it exceedingly improbable that such an emergency will arise in the near future. Although sensational reports have been printed from time to time in the daily papers as to the probabilities of a commercial supply of rubber existing in the West, Professor Hall has not gone farther than in his original statement on the rubber discovery, which is to be amplified in his complete report to be made this spring. He stated:

"For two months the writer carried on field surveys in eight Western States in order to make estimates of the tonnage and distribution of rubber-carrying shrubs and to gather samples for chemical analysis. The results indicate that the total amount of rubber present is much greater than we originally supposed, although the percentage content of the shrubs is perhaps less over much of the area covered.

"Four of our experimental plots in Eastern California have been studied and evidence obtained which indicates that it will be necessary to destroy the plants in order to harvest the rubber. On the other hand, a method is being developed which gives promise of increasing the weight of the rubber-carrying portions and will be particularly applicable if the plants are brought under cultivation.

"In order to get an expert opinion on the quality of the product 25 pounds of shrub were sent to Dr. D. Spence, chairman of the sub-committee on rubber and allied substances of the National Research Council. After some months, during which time deterioration probably took place, the rubber was separated by the ordinary mechanical means and a per cent of pure rubber obtained. This was tested and reported upon as of 'high grade and average quality—not as good as fine Pará, but a great deal better than most African low grade rubbers.' Dr. Spence also reported that 'the rubber vulcanizes readily and gives a product of very fine quality.'"

In order to give an idea of the inexhaustible supply of rubber-producing plants in California it may be stated that there are 70 species of them in that state, containing from 1 to 10 per cent rubber, according to Professor Marcus E. Jones, who has been assisting Professor Hall. Professor Jones, who was formerly with Colorado College, has extended investigations over Utah, Idaho, Nevada, Wyoming, and Colorado.

The "Common Green," which Professor Hall describes as the "most interesting" which he has investigated, grows 7 feet high and an illustration of it accompanies this article. The specimen was taken from the north side of Mono Lake, Mono County, California. The rubber from it is said to be a little better than that from guayule. Another variety of rubber plant is the *Ericameria*, or "dwarf rabbit bush." It is very small and grows sparsely in rocky places. Its rubber content is 10 per cent. but the product is very short and very resinous.

The investigation now nearly concluded is certain to bring up the subject of utilizing the great waste lands of the Sierras in the cultivation of these rubber producers. These lands are available and cheap, and need no irrigation. That the rubber is there is demonstrated, and undoubtedly other experiments are under way in greatly separated parts of the United States to demonstrate whether this supply cannot be utilized by stimulating the growth of these plants and demonstrating its commercial possibilities. The forthcoming report will be treated at length in THE INDIA RUBBER WORLD and should be of the greatest interest to the whole rubber trade.

What Won the War?

ARMAMENT makers, ship builders, explosive manufacturers, airplane and balloon constructors, naturally consider their own individual products as vital factors in the victory of the Allies.

Sidney Neu, of the great Westinghouse companies, however, claims that electricity won the war. Though it was not in evidence he argues that were it not for man's control of this subtle fluid there would have been no victory.

Developing the argument, he says:

Think back to the gunsmith of a century ago. Could he have armed an army of four million men in eighteen months? With four million men withdrawn from production, could any army have been equipped? Electrically driven machine tools made possible what human sweat and muscle never could have accomplished.

Unheard of tons of steel have been required, and those best able to judge have said that without electric drive to speed production in the mills we should have fallen short.

Uniforms were needed to clothe the men who fought. They could not go naked while weavers leisurely wove the cloth, cutters shaped it, and tailors sat cross-legged slowly stitching seams. Electricity was called on to do these things with speed, and the uniforms were made—breeches, shirts, leggings, shoes, underwear, hats, belts, millions of them.

The chemicals that speeded the shells on their way, that burst the shells to fragments, that made the very air untenable for the foe, owed their production in the tremendous quantities required to electricity. Electrochemical processes fashioned some, electric drive furnished the controllable mechanical power for making others.

The Army and the nation needed food and electricity produced it. Fertilizers produced by electrochemical means made the earth productive, electric drive threshed much of the wheat, prepared the meat, operated the packing plants, ground the flour, entered everywhere into the production of food to make human labor less and to release more men to carry fear to the hearts of barbarians.

In its gentler aspects electricity appeared even on the field of battle, guiding armies, battalions, even individual shells. The airman by his wireless telephone and telegraph guided the gunner far in the rear who would otherwise have been blind. The commander watched through his wire and wireless network the progress of his fighting units miles away, kept them correlated into one vast machine that acted as a whole, not as a multitude of unrelated parts.

Billions of billions of electric sparks daily ignited the cylinder charges of motor trucks, lorries, airplanes, motor cars, motorcycles and the victorious tanks. Without electricity for ignition these engines would have been unheard of.

Electricity enabled the ships at sea, with their precious freight of American manhood, to keep each other in touch, to avoid the hidden dangers that menaced, to signal back as each arrived, "We're here, and safe!"

The ships themselves—did not electricity produce them? Their plates were rolled and shaped and machined in electrically driven machinery. Electric cranes transported their parts, electric compressors furnished the power behind the busy riveters.

Speed won the war when it was won and saved millions of human lives and untold additional human suffering—America's speed. The world marvels at America's speed and even America marvels. America was capable of this unheard of speed because America has made electricity its servant. Many men have been needed to accomplish what has been done in preparation, but at least twice and probably three times as many men would have been needed had not electricity been ready to help; and there was not that many men.

Electric light in battlefield searchlights patrolled the sky and No Man's Land, guarding against surprise. At home protective electric lighting dispensed with many human guards who thus could lend their hands to much-needed production. Within the busy plants men worked through the long hours of night as swiftly as by day, because electric illumination was at hand.

So short was the man-power that even with electricity's help women were required to lend their aid in making ready our fighters' equipment. Without electricity women's help would have been but feeble. It is because electric drive tames rough forces and makes cumbersome machinery so simple to manipulate that it was possible for women to do what only men had done before. Work with machinery had been considered man's exclusive sphere because it had been rough work, heavy work. Electricity has made it such light work that it no longer fatigues the frailer sex.

Nor is this alone electricity's part in putting women at the lathe, the punch-press and the planer. It has simplified the home so that she can be spared. We forget the duties that women formerly had in the home. She was spinner and weaver and tailor, she was laundress and housemaid, baker and cook, milkmaid and charwoman. Electrical machinery and electrical transportation have taken many of these duties out of the home. Those that are left, washing, ironing, sweeping, cooking and sewing, electricity has so lightened that women have been able to take their part in saving the world for those that dwell in it. Where many women were needed in the "good old days" to keep one household running smoothly, one alone now finds time to spare.

Trace back to its source any thing or factor that has helped to end the struggle, and electricity is found, not once but many times to have touched it and hastened it on to consummation. Truly, electricity has won the war, electricity guided by American brains, led on by American energy, crowned by American valor.

In every instance, however, electricity was walled in, concentrated, guided, held in check, rendered efficient, made safe by rubber. In the last analysis, therefore, india rubber won the war!

Echoes of the Great War.

THE VICTORY LIBERTY LOAN.

THE Secretary of the Treasury, Carter Glass, in his first address to the people, issued an appeal to prepare for the Fifth Liberty Loan which the financial demands on the Government dictate must be floated at an early date. Mr. Glass urged the preservation of the same patriotic spirit that has been shown in raising previous loans and recommended that all bond-selling organizations be continued. He noticeably commented on the fact that Americans once for all have disproved the slander that they are merely a money-loving people, incapable of rising above materialistic things.

As reasons for exerting a particular effort in preparing to raise the Fifth Liberty Loan, which is to be called the Victory Liberty Loan, Mr. Glass stated that the expenditures of the Government for that portion of the fiscal year between July 1 and December 16, 1918, excluding transactions in the principal of the public debt, exceeded $9,600,000,000; that it is estimated that the cash outgo from the Treasury during the fiscal year ended June 30, 1919, will be $18,000,000,000, of which more than half was spent in the five and one-half months prior to January 1; and that bills incurred during the peak of production of war materials at the time of the signing of the armistice must be paid.

Mr. Glass took into account that the American people face the Victory Liberty Loan with the handicap of the tendency to feel exultant and self-satisfied with what has already been accomplished and the inclination, now that peace negotiations are under way, to resume individual and business activities; but he called attention to the fact that our boys still overseas have their work before them, in which we must support them as heretofore, and he finished his appeal with an expression of confidence in the American people that they will "respond once more to the call for service and will at once prepare the ground and sow the seed, so that the harvest may be abundantly fruitful."

The Victory Liberty Loan campaign will open Monday, April 21, and close three weeks later, Saturday, May 10. The loan will take the form of notes of the United States, maturing in not over five years from the date of issue, the rate of interest to be based on existing conditions just prior to the opening of the campaign, possibly in excess of 4¼ per cent, the rate on the last two loans. The amount of notes to be offered has not been announced, but it has been generally understood that it would be a minimum of $5,000,000,000, with the Treasury reserving the right to accept all oversubscriptions.

Patriotism first and investment opportunity will be among the chief appeals to the people to support this newest loan. Secretary Glass has also explained recently how necessary it is that the new notes secure the widest circulation possible among the people in order that the banks of the country may be relieved of the burden which would otherwise be imposed on them. The business of the country, he points out, looks to the banking system for credit wherewith to carry on its operations, and if this credit is absorbed to a large extent by the purchase of government securities there will be many limitations placed upon the supply of credit for business purposes. The wage-earner is also directly concerned, that full employment at good wages may continue.

REVISED FREE AND "RATIONED" EXPORT LISTS.

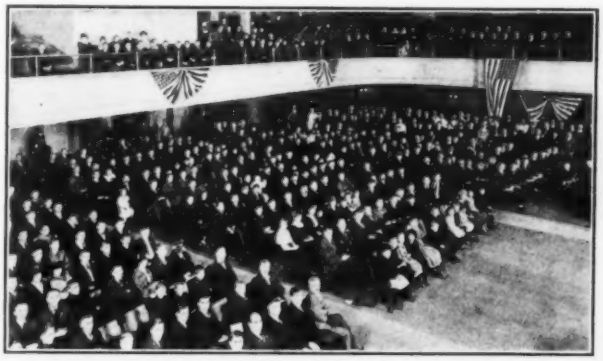
The War Trade Board announces that the following rubber products will be licensed freely for export when destined to Denmark, Norway, Sweden, Holland, Switzerland, Luxemburg, Finland and the occupied Rhine provinces. They may be consigned directly to the consignee named in the export license, or "to order." The rubber goods named in the revised list are: athletic goods, bicycle pedal rubber, rubber erasers, toys, dolls and games of all kinds, including or consisting of rubber.

The "rational" list of exports to Sweden, for which a fixed ration has been provided under the terms of the agreement with the Government of Sweden, includes raw rubber and rubber manufactured goods other than tires and tubes, pedal rubbers, brake blocks of rubber for bicycles, and rubber erasers.

Applications for licenses to export these "rationed" commodities to Sweden will be considered by the War Trade Board only when such applications are accompanied by the numbers of the import certificates issued by the Swedish Handel's Kommission upon the guaranties of the appropriate importing associations, and shipments may be consigned only to such associations.

AMERICANIZATION ACTIVITIES IN AKRON.

If the great world war had served no other purpose than that of inspiring in the minds of the foreign-born people in America a desire to become, first, American, and then so well read and



An Americanization Class.

educated that customs and methods of all countries were disclosed to them, it would have achieved a great social change.

American industry has been upheld and operated smoothly by foreign labor, at least seventy per cent of which could not read nor speak the English language. This condition was unfair to both workmen and the industry. In full knowledge of this industrial concerns and educational leaders in Akron, Ohio, have taken up the project of Americanization among foreign workmen, and the Board of Education is urgently advocating the adoption of an Americanization program by every concern in the city.

Perhaps no concern in Akron has taken up this work more seriously than the Firestone Tire & Rubber Co. Classes may be seen assembled under the direction of instructors furnished by the city Board of Education nearly every day in the spacious lounging rooms of the Firestone Club House, which offers unusual facilities for work of this kind.

These men and women are instructed much as children are in the primary grades in school. Classes are divided according to the progress made by the student. Rudimentary English, reading, and the use of the English alphabet form the chief subjects for study in the first classes. As a man develops and acquires a sufficient working knowledge of the English language to carry on his studies for himself, he is urged to read the newspapers and magazines and to obtain for himself information relative to lands, governments, and customs outside of his own native country.

After a student completes a course as described herein, he is

given the privilege of passing an examination for citizenship papers. All aliens who have not already their first papers are urged to take them out, and this class work is intended to enable them to pass the examination which is given for second papers. Summit County common pleas judges have resolved to accept as final evidence that a man is ready for his second papers, his passing an examination which has been prepared by the Assistant Superintendent of Schools. This examination is in the form of a questionnaire.

By the time the student has reached this stage, he has become that for which this entire movement was conceived and placed in operation. He has become an American citizen, a student of civic government, a fellow-being to be respected, and a man whose normal intelligence will no longer be submerged beneath the barrier of foreign nativity.

GOVERNMENT SALVAGE OF WASTE TO CONTINUE.

The likelihood that the Government will maintain a permanent waste reclamation service as a needed conservation measure for the benefit of American industry in time of peace is of great interest to rubber-goods manufacturers. Of the waste materials of various kinds salvaged during the year 1918 by the War Prison Labor and National Waste Reclamation Section, Labor Division of the War Industries Board, and valued at $1,500,000,000, old rubber was represented to the amount of $300,000,000.

So good was the showing in salvaging the materials needed by the Government in the prosecution of the war that the work will probably be taken over at an early date by the Department of Commerce and put on a permanent basis. The eighty-six local reclamation councils in leading cities of the country, and some two hundred others in process of formation, are destined to form an endless chain ensuring the assistance of civic and other organizations and school children in establishing permanent municipal bureaus to collect and reclaim all waste materials for peace-time industries just as garbage and ashes are collected. It is the logical way to meet the unprecedented demand for raw materials and will tend to restore retail prices to pre-war levels.

SALES BY ALIEN PROPERTY CUSTODIAN.

A number of rubber and chemical properties of enemy ownership have recently been sold by the Alien Property Custodian. The names of the purchasers and the prices paid are as follows:

The Traun Rubber Co., New York City, bought by William Schrader, 249 Fourth avenue, New York City, for $20,000. Sale to be approved.

Goetze Gasket & Packing Co., New Brunswick, New Jersey, bought by Peter F. Daly, New Brunswick, New Jersey, for $57,100. Sale not yet approved.

A. W. Faber, Newark, New Jersey, bought by Theodor Friedeberg, 30 Church street, New York City, for $131,250. Sale has been approved.

Heyden Chemical Works, Garfield, New Jersey, was sold for $605,000, but sale was not approved as to price by the Advisory Sales Committee. It was subsequently readvertised for sale.

CHEMICAL FOUNDATION, INC.

The Alien Property Custodian, acting under the authority of the amended Trading with the Enemy Act of November 4, 1918, has organized a corporation known as the Chemical Foundation, Inc., all of whose $500,000 capital stock has been subscribed for at par in cash by a large number of American manufacturers of chemicals and dyestuffs. The Chemical Foundation, Inc., has purchased from the Alien Property Custodian, for $250,000 about 4,500 patents covering chemical processes and products, registered in the United States by Germans and other enemy alien owners. The Chemical Foundation, Inc., will issue, without discrimination, non-exclusive licenses to any American manufacturer who may make application therefor, under the terms of which the American manufacturer may use or make the patented processes and products on a moderate royalty basis. The effect of this plan will be to totally exclude from the United States the importation of any dyes or chemicals made in any country in the world under any of the patents held by the Chemical Foundation, Inc. Of the subscribed capital, $250,000 is available as a working fund for the prosecution of actions involving the importation or manufacture of products infringing on the patents to which the Chemical Foundation, Inc., has acquired title.

The patents now held by the Chemical Foundation, Inc., cover most of the processes and products used in the dye industry and in addition to this protection afforded under the patent laws, there is now in effect the Tariff Act of September 8, 1916, which imposes a heavy ad valorem duty on finished dyestuffs made from coal tar and smaller ad valorem duties on intermediates, together with specific duties on both finished products and intermediates. These customs duties apply to all synthetic dyestuffs imported, wherever made and by whatever process.

RUBBER MEN RETURNED FROM SERVICE.

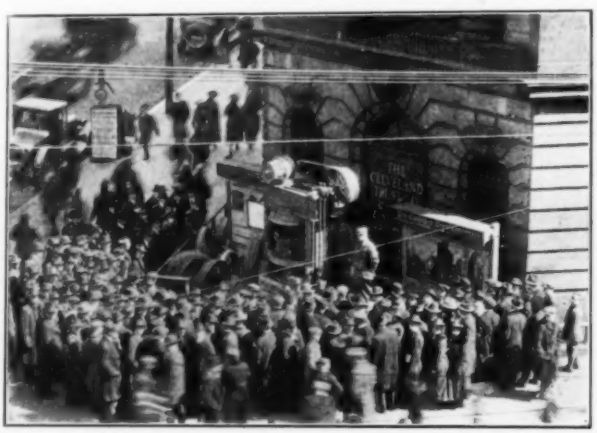
The Pennsylvania Rubber Co., Jeanette, Pennsylvania, reports the following men returned from service: Lieutenant George Blair, 18 months in the Naval Aviation service, manager of Philadelphia branch; P. F. Armitage, one year second machinist's mate in the Naval Reserve Force, in charge of northeastern Pennsylvania territory, with headquarters at Philadelphia branch; Milton H. Batz, first-class sergeant, representative in western New York; and William E. Littell, with the Motor Instruction Division, calling on the trade in Central Pennsylvania.

Fred M. Elvidge was recently discharged from the Army and has returned to his former position with the Ajax Rubber Co., Inc., New York City. At the time the armistice was signed he had worked his way up from private until he was about to receive a captain's commission.

WELLMAN-SEAVER-MORGAN DEMONSTRATION.

A novel method of showing how solid tires are put on and taken off the wheels of motor cars was recently inaugurated by an enterprising builder of tire-applying presses. A 200-ton press was installed at a prominent business corner in Cleveland, Ohio, and actual demonstrations of mounting and demounting tires were given.

The exhibit was attractively decorated with oil-painted posters and was flood-lighted at night. Grouped around the press were

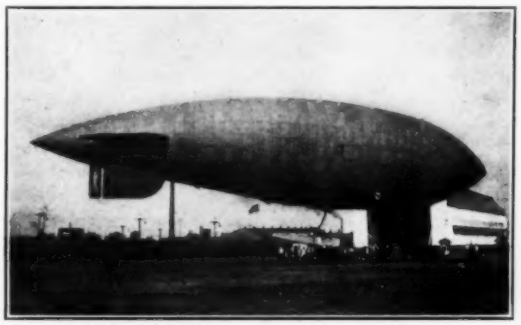


AN OUTDOOR TIRE-APPLYING EXHIBIT.

various sizes of tires, up to the largest solids built, including the following well-known makes: Brunswick, Firestone, Goodyear, Hood, Kelly-Springfield, Kokomo, Mason, McGraw, Owen, Polack, Republic, Sterling, Swinehart, United States.

The Aeronautical Exposition.

THE Aeronautical Exposition was held in the 69th Regiment Armory and Madison Square Garden, New York City, from March first to fifteenth, under the auspices of the Manufacturers' Aircraft Association. This exposition was a revelation of the remarkable development effected in aircraft by American inventors and manufacturers under the stimulus of the war, and afforded an



The B. F. Goodrich Co.

BLIMP TYPE DIRIGIBLE.

inspiring outlook on the commercial possibilities of aircraft applied to passenger transportation. In balloon construction particularly, much has depended on the resources of American rubber companies, since the envelopes of dirigible, kite or observation, and spherical balloons are built entirely of rubberized cloth.

In the United States the manufacture of balloons has been confined largely to The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., and The Connecticut Aircraft Co. All of these companies were represented at the show by exhibits of their typical dirigibles, kite and spherical balloons, and various rubber accessories.

The prediction is freely expressed by those conversant with the problem that the day is at hand when passenger travel by air will be established on a commercial basis as a necessary form of modern transportation. As a commercial factor the dirigible is better adapted for aerial transportation in possessing wider cruising radius and carrying capacity than the airplane. The dirigible by its gas content in the bag is able to stay aloft at all times without the aid of its engines and these are chiefly used as a means of propulsion.

There was suspended in the Armory a navy coast patrol dirigible of Goodrich manufacture of the following dimensions: length, 167 feet; diameter, 33 feet; volume, 80,000 cubic feet. This dirigible had seen 17 months' service. Also in the Armory, The B. F. Goodrich Co. exhibited an interesting collection illustrative of balloon manufacture, such as rubberized balloon cloth; shock absorber cord, consisting of many square, pure rubber threads bound together in cylindrical form by a cover of braided cotton; Gammeter car suspension patches and gas valves; samples of rope knots used in balloon rigging; a model spherical balloon, and airplane cord tires.

In the field of aeronautical production The B. F. Goodrich Co. is credited with 14 dirigibles, 362 observation balloons, over 1,500,000 feet of airplane bumper cord and many Silvertown cord airplane tires, besides many improvements and inventions in balloon manhole flanges, gaskets, glands, etc.

An interesting feature of the Goodrich display was the periodic exhibition of a series of moving pictures showing the manufacture of balloons.

The Goodyear Tire & Rubber Co. exhibit, located in the Garden, was similar in character and scope to that already described. A Goodyear kite or observation balloon was exhibited and a display made of riggers' knots; various metallic accessories; balloon cloth made from cotton raised on the Goodyear cotton plantation in Arizona; Goodyear balloon gas-valve; the illuminated inspecting table for examining rubberized fabrics; and a model compartment passenger car fitted with sleeping accommodations designed in connection with passenger traffic by dirigible balloon.

The Connecticut Aircraft Co. showed a spherical balloon and a model dirigible as planned for passenger service between New York and Atlantic City, beginning in the autumn of this year.

Wellington, Sears & Co. exhibited a line of balloon fabrics and non-tearing cotton airplane cloth designed for airplane wing covering. Crowning triumphs in this line were the five-and-five basket weave and three-ounce Warwick seamless aero-cord fabrics. The latter is woven similar in design to automobile cord-tire fabric, from chemically purified mercerized 3-ply warp yarns and single spun filling yarns. This fabric, weight for weight, tests 38 per cent stronger than 3½-ounce grade A linen made of uncleansed, single-spun yarns. Similar non-tearing cloths of heavier weight were also shown, intended for balloon making. These deserve investigation on the part of makers

The B. F. Goodrich Co.

KITE OR OBSERVATION BALLOON.

of mechanical rubber goods, as to their adaptability for high-grade hose manufacture and other purposes.

The Bristol Co. exhibited instruments for measuring the speed of aircraft, simple recording thermometers for air, and wet and dry bulb thermometers for recording the hydroscopic state of the atmosphere.

RUBBER MANUFACTURES IMPORTED INTO BOMBAY, BRITISH INDIA.

Unofficial figures showing the general imports of Indian produce into Bombay during the year 1917, as given in the "Bombay Government Gazette," include the following comparisons: 1916—rubber manufactures, $1,487,250; 1917—$1,569,772.

The Evaluation of Rubber Plantations.

By Kelts Colfax Baker, M.S.F.

THE evaluation of rubber plantations is a subject of increasing importance to the rubber world. The aggregate value of the planting industry is increasing rapidly because of increased acreage and increased yields per acre. The price of crude rubber is at the same time decreasing, or must necessarily do so in the near future, thereby leaving a smaller margin of profit to the producer. Hence arises the rapidly increasing need for a careful and scientific evaluation of plantation properties. The laxness of the industry in general in realizing the importance of this is seen in the fact that the exact value which most properties are to their owners has never been decided upon. Not only have these evaluations never been made, but there has been no system for calculating values yet evolved which is mathematically correct, and which will hold in court. Innumerable needs for this knowledge might at any time arise, common instances of which might be in the case of damage suits, unjust taxation, any need for accurate assessment, or in the case of selling and buying properties. It will, in short, allow planters and investors to maintain a complete and accurate inventory of their plantation investments.

Every large planter and investor in plantation securities must already have had some instances arise in which a definite system for evaluation would have been of great assistance, and would have added greatly to their sense of security in their investment. In most past evaluations of properties, taking, for example, the late evaluation of one of the largest holdings in the Orient, there have been no two men who have calculated in the same manner, and as a consequence no two evaluations are strictly comparable. For instance, one eminent V. A.—Mr. A.—calculates on the basis of a seven years' purchase of profits, while another equally eminent V. A.—Mr. B.—on the other hand, figures on the basis of a ten years' purchase of profits, and a third—Mr. C.—figures on still another system which includes a seven years' purchase of profits with some sort of an addition to include the value of the buildings, machinery, etc., on the property. Why is Mr. A. justified in assuming that the value of the property is seven years' profit while Mr. B. assumes that it is worth ten years' profit? It comes down merely to a question of the personal fancy of the evaluator. What is the basis of Mr. C.'s addition of an inventory to a seven years' profit? This instance is not exceptional, but typical.

There is more than a merely theoretical difference between a "guess" and "estimate." Any figure in order to be an estimate must have been derived from the combination of some basic assumptions with some definite and logical method for calculation. Otherwise it is a guess. It does not seem to the writer that it is reasonable for the planting industry to guess at the value of properties when there is every probability that by study of the problem there can be evolved a definite and mathematically correct method for estimating their value. The evolving of this method does not mean pioneering to any great extent, as the methods used by modern public utility engineers in evaluating their properties and the method used by bankers in evaluating long-term bonds can be used as guides. This value when obtained should be a maximum value in case of buying properties and a minimum value in case of selling properties. It may often be possible to purchase considerably below this maximum valuation or it may be possible to sell considerably above this minimum valuation, but in each case the negotiator would be very sure that he was doing so rather than merely guessing that he was.

In a memorandum replying to my letter of some months past to Mr. B., the prominent V. A. mentioned before, the advisability of formulating some definite system was questioned on the point that by so doing "all the individuality of the reports of the different men would be lost." In answer to that the writer may say that any system of calculation, to be of any value whatever, must be elastic, but the calculations may be so systematized that we will have this elasticity, and yet have all the advantages of a definite method of calculation. In engineering reports and in the evaluation of engineering projects certain formulae are used, and certain evaluations are made by prescribed methods, yet engineering reports cannot be said to be "cut and dried" propositions in which no individuality can be shown. The assumptions of the planter may necessarily be less accurate than those of the engineer, but his methods of calculation should be just as accurate and as axiomatic as engineering methods. It is said that figures never lie, but it cannot be said that a system of figuring never lies.

In the memorandum mentioned above, the advisability of having a definite system was questioned by the statement that "although we should have a system, no two reports on one estate would agree." In answer to that the writer may say that this statement in itself is an admission that the use of a definite system for the calculation of estimates and values does not prevent the elasticity which is desired. On the other hand, it will allow two reports which vary in results to be really compared. If the systems of calculation are different they cannot be compared in the proper sense, because the effects of the different systems of calculation used may nullify or increase the effects of any differences in basic assumptions, as to future yields, future prices, future costs of production, etc.

In considering the standardization of any system for calculations there appear to the writer to be at present four main variables, three of which (No. 1, No. 2, No. 3) will ever remain variables, but one of which (No. 4) should become standardized. In order to make the reports on any particular property strictly comparable, No. 2 and No. 3 should also be standardized for that particular property. These variables are as follows:

No. 1. Estimates as to yields and cost of production.

No. 2. Estimates as to the price of the product and the profit per pound.

No. 3. Interest desired on the money expended.

No. 4. Method of calculating the value of the profits after the above have been ascertained.

The "estimates as to the yield and cost" (No. 1) will vary with the different men examining the property. In order to give the system the desired flexibility, and to allow each examiner an opportunity of using his individual judgment, this particular branch of the valuation cannot be systematized except in a very general way.

The "estimates as to the price of the product" (No. 2) should be fixed in most cases by the investors—not the V. A. (and in many valuations this has been fixed at an arbitrary figure by them at 40 cents gold per pound of dry rubber). This, with the estimates of the V. A., as to yields and cost of production, (No. 1) will give the "profit per pound."

The third item, or the "interest desired on the money expended," must be furnished by the investors for whom the valuation is being made. In this relation it must be considered that the rubber-planting industry represents an investment which ordinarily lies at a great distance from the investor, and that its success is in very many ways absolutely beyond human control—as is the case in all planting enterprises. It is possible to control quite completely the manufacturing and sales departments of the rubber industry, but the success of the planting and of the

enterprise depends so much upon the climatic factors, the sudden appearance of disease, pests, etc., none of which at the present time seems particularly dangerous, but which in so many planting enterprises have wrecked them, that we cannot say it is completely under control. Hence, there is a risk for which compensation can be made only by an increase in rate of interest demanded by the investor. A fair rate of interest should be: for the owner—the interest rate which he estimates he could get in new investments, with the same risk incurred; for the buyer—the interest rate which he desires to make on this particular investment, considering the risk involved. The writer's personal opinion is that 20 or 25 per cent is a fair rate of interest to use in the calculations for the value of rubber estates, but this will no doubt meet the adverse criticism of optimistic planters who are not buying.

The fourth item, or the "method of calculating the value of the property, after the above estimates of cost, yield, price of the product, and interest rate have been fixed," is the one of most importance to us in any attempt to standardize the evaluation.

The writer believes that a method to be correct must cause the values of the property to vary in correct ratio with the following estimates which form the basis for the evaluation:

(1) Time required to bring the area into full bearing.

(2) The amount of money which must be expended per acre to bring the estate into full bearing.

(3) The time at which this money must be expended.

(4) Profit on production per year until estate is in full bearing.

(5) The wait necessary before profits will pay the desired rate of interest.

(6) Profit on production per year when the estate is in full bearing.

(7) The age at which we should consider a tree must be replaced.

(These items are, of course, all future estimates—not past expenditures.)

In other words, the calculated value of the property should have a mathematically correct relation to the estimated profits. There may occur instances, however, where, due to some external reason, the value of a property itself will be all out of proportion to the profits obtained, yet even in such a case it is necessary to know its value as a profit-earner before its extraordinary value can be estimated.

The seventh item—the age at which the tree must be replaced, or its economic death—is a very debatable question. The writer believes that generally this will occur in the neighborhood of from 60 to 70 years of age—that is, that the risk involved justifies the investor in considering that his income from the trees will cease to be profitable by that time unless the trees are replaced. This can be lengthened to 100 years, however, without any appreciable difference in result.

That the realization of this need for standardization is not original with the writer is evidenced by the fact that several attempts have been made to develop a system for the calculation. One of these, by a Ceylon and India V. A., has been tried out quite extensively by the writer, and was at one time considered by him to be a solution of the problem, but in the light of further investigation he regrets that he cannot recommend it. While it appears to give fairly good results for properties which are already paying a profit, it is not applicable to properties not yet in the producing stage.

A system, to be applicable, must include the features of farm valuation, in that after the yield starts there is an annual "crop," which in time becomes fairly uniform; and the feature of forest valuation in that there is considerable wait before yield starts, and that profits or "returns" are hence delayed; also, that the income will not continue indefinitely, but probably only a matter of fifty to sixty years.

Another matter which should be considered is the potential value of unplanted areas suitable for rubber planting. For instance, many large planters are paying—and have paid for some years—rental on a large unplanted area, a good proportion of which is suitable for rubber cultivation. Due to its location it can be easily and efficiently managed in conjunction with the present planted area. Its inclusion within the property boundaries is a valuable asset and increases the value of the property as a whole. Consequently, in an evaluation of the property the potential value of this unplanted area should be included.

An adaptation of Schlich's formulae in common use in the evaluation of forests and forest lands can be made applicable to the rubber-planting industry. The principles upon which these formulae are based are as follows:

(1) The present value of the entire property is equal to the sum of the present value of the planted area, plus the potential value of the unplanted area.

(2) The present value of the planted area is equal to the estimate mated income value of the area when in full bearing, calculated at the desired rate of interest, less the total value of all estimated expenditures to be made in order to bring the area up to that state, calculated at the legal rate of interest, and this difference discounted to the present time at the desired rate of interest; plus the sum of the present values of all estimated profits to be made, until the area is in full bearing, calculated at the desired rate of interest.

(3) The potential value of the unplanted area is equal to the result of the number of acres suitable for rubber planting, multiplied by the potential value of one such acre.

(4) The potential value of an unplanted acre of rubber land is equal to the estimated income value of one acre when planted and in full bearing, calculated at the desired rate of interest, less the total value of all estimated expenditures to be made in order to bring the area up to that state calculated at the desired rate of interest, and this difference discounted to the present time at the desired rate of interest; plus the sum of the present values of all estimated profits to be made until the acre is in full bearing, calculated at the desired rate of interest.

The mathematical development of these formulae is a detail in which the writer assumes that the reader is not interested at present, but which can be found in Schlich's "Manual of Forest Valuation" and in Roth's "Forest Valuation." Suffice it to say that in these formulae can be included every variable mentioned in the previous paragraphs, and that it appears to the writer that the resultant calculated value of the property will bear a mathematically correct relation to the estimated expenditures and income.

In order to develop this theorizing into the form of concrete workable formulae, let us make the following assumptions:

(1) Consider a property which contains both planted and unplanted areas;

(2) Consider that the age of the planted area is five years;

(3) That profits can be obtained from a planted area during the sixth year of its life;

(4) That a plantation comes into full bearing at about 15 years of age, and that the yield then continues to be comparatively uniform;

(5) That the economic life of the tree is ended at about 65 years of age, or 50 years after it is in full bearing.

Then allow these basic assumptions to be represented in the formulae as follows:

E=interest desired by the investor or evaluator;

e=interest at which money to be used for development can be procured;

N=number of unplanted acres available for planting;

P_1, P_2, P_3, P_4, P_5, P_6, P_7, P_8 and P_9= estimated net profits from total planted area for the first, second, third, fourth, fifth, sixth, seventh, eighth and ninth years of profits, respectively;

P_o= estimated annual net profits which start on the tenth year of profits (when the plantation comes into full bearing) and continues through the economic life of the trees;

Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7, Y_8, and Y_9=estimated net profits from one acre during the first, second and third to the ninth year of profits, respectively.

Y_e=estimated annual net profits from one acre which start on the tenth year of profits (when the acre comes into full bearing), and continue through the economic life of the tree.

C_1, C_2, C_3, C_4, and C_5=the excess of estimated expenditures over estimated incomes for the first five years, respectively, at the end of which time it is estimated that the income will exceed expenditure.

The value of planted area is equal to the sum of

$$\frac{P_1}{(1+E)} + \frac{P_2}{(1+E)^2} + \frac{P_3}{(1+E)^3} + \frac{P_4}{(1+E)^4} + \frac{P_5}{(1+E)^5} + \frac{P_6}{(1+E)^6}$$
$$+ \frac{P_7}{(1+E)^7} + \frac{P_8}{(1+E)^8} + \frac{P_9}{(1+E)^9} + \frac{P_e\,[(1+E)^m-1]}{E(1+E)^m}.$$

The value of an unplanted acre is equal to the remainder of:

$$\left[\frac{Y_1}{(1+E)} + \frac{Y_2}{(1+E)^2} + \frac{Y_3}{(1+E)^3} + \frac{Y_4}{(1+E)^4} + \frac{Y_5}{(1+E)^5} + \frac{Y_6}{(1+E)^6}\right.$$
$$\left. + \frac{Y_7}{(1+E)^7} + \frac{Y_8}{(1+E)^8} + \frac{Y_9}{(1+E)^9} + \frac{Y_e\,[(1+E^m-1]}{E(1+E)^m}\right]$$
$$-[(C_1(1+e)^1 + C_2(1+e)^2 + C_3(1+e)^3 + C_4(1+e)^4 + C_5(1+e)^5]$$

The value of the total unplanted area is equal to the product of N multiplied by (value of unplanted acre).

The total value of the property is equal to the sum of the value of the total planted area plus the value of the total unplanted area.

It is assumed, of course, in the estimation of costs, and the consequent calculations of estimated annual profits, that the principles of good accountancy are followed.

The resultant value should be considered;

The maximum price which any man can pay, provided he considers the calculated interest rate as a minimum he would accept;

The minimum price or that which the owner can accept, provided he considers his future estimated income to be worth its capitalized value at the calculated interest rate as the minimum. In this connection, the writer begs to repeat from a previous paragraph, this memorandum: "It may often be possible to purchase considerably below this maximum valuation or it may be possible to sell considerably above these minimum values, but in each case, the negotiator should be very sure that he is doing so, rather than merely guessing that he is."

Should this memorandum have shown the need for, and the possibilities for, placing this work on a scientific and mathematically correct basis, the writer suggests that, for the sake of the industry, planters and investors in rubber-planting enterprises arrange to have the problem investigated by some one in whose judgment they have confidence, thereby discovering whatever faults in logic there may be in this suggested system, and evolving a better one.

Carton-Making in the Rubber Factory.

MODERN merchandising methods exact from manufacturers not only goods of proper and standard quality, but goods so packed that they can be conveniently stored and kept in good condition without deterioration until sold, and can then be delivered to the consumer in attractive form. Therefore, in place of bulk shipments, in bags, boxes, or barrels, many lines are shipped in cartons, big and little, of which millions are used in rubber goods production.

FIG. 1—AUTOMATIC CARTON-MAKING MACHINE.

FIG. 2—MACHINES FOR PAPER-COVERING CARTONS.

Take rubber shoes as an example. Years ago they were shipped in cases, the pairs simply tied together and packed in bulk. Today they are delivered in single-pair cartons, a boon to the retailer in placing the goods in stock, a saving of time in selling, and a convenience to the customer in carrying home the purchase. To meet this modern requirement of the trade the progressive rubber manufacturer has added to his plant a complete paper-box factory, and few large plants are without them.

HOW CARTONS ARE MADE.

The making of a paste-board box is far from a simple operation, although machinery has been so perfected that many of the processes are practically automatic, while others are so simplified that no marked expertness is required. The stock, or box-board, for making cartons comes in sheets of the proper size to save any waste from trimming. The first operation is to score these sheets where they are to be bent, and to cut them apart, of

the shape and size to make up into single boxes. The working of the scoring and cutting-machine is interesting. A sheet is fed under the series of circular knives or scorers, and emerges with deeply indented lines where folds are needed. As soon as the sheet has passed completely through, it automatically starts the mechanism that carries it at right angles through another series of scorers and cutters, the former completing the scoring, and the latter cutting the strips apart. These strips represent the two sides and bottom of a large single box or of two smaller boxes.

Fig. 3—Machines and Conveyor Belts for Stapling Cartons.

Fig. 4—Press for Cutting, Scoring, and Printing Cartons.

OLD AND NEW METHODS COMPARED.

The old-fashioned way of making a box was to make the ends, sides and bottoms of one piece, the flat shape resembling, to some extent, an exaggerated cross. Modern conservation, however, has resulted in eliminating the great waste of cutting out four square pieces the full height of the box by making the ends separate, and attaching them later to flanges on the larger part. Therefore, the strip which comes from the scorer and cutter is Therefore, the strip which comes from the scorer and cutter is slightly wider than the length of the box, and is scored lengthwith crosswise scorings where the sides bend up from the bottom.

These flat sheets are next taken to a corner-cutting and mitering machine, where miter-shaped triangles are cut out at the intersections of the scorings and the sheets thus made ready for the next operation. A machine takes these sheets, presses them so as to turn all the scorings, spreads adhesive on the turned flanges, and firmly attaches the box-ends, which are automatically fed from piles placed in the machine. Two girls keep the machine supplied with box-parts, and enable it to turn out thousands of boxes per day. These boxes, made of rough chip-board or mill-board, are to be covered with glazed paper, and here machinery has enabled greatly increased output and exact uniformity.

THE CORNER-STAYING PROCESS.

Naturally, the corners are the weak spots in such boxes, and corner-staying consists of pasting a strip of tough-fibered paper around each corner, or placing metal corners or inserting wire staples. The latest covering machinery, however, combines the corner-staying and the covering in one process. The boxes are placed, one at a time, on a form adjusted to fit the box. The glazed paper strip is fed from a roll, glue applied to its under side, and fed along, that the paper may be properly "tempered" to prevent tearing, yet be of the right adhesive state to stick at once and smoothly. Meanwhile, from another roll, is applied the staying material, sometimes cloth, but usually a tough paper especially made for this purpose from rope stock. This stock is cut just the right width to go around the corners, and is then attached to the back of the cover strip as it goes forward. The box, or cover, is on the revolving form ready to receive the strip which is cut off at just the right length to overlap the ends. In covering box-lids the operator runs her forefinger along in front of the paper to lay the flange of the cover flat upon the form.

THE TOPPING MACHINE.

Next comes a topping machine which cuts, pastes and applies the glazed-paper top to the lids, thus giving them the required finish. The machine is so built and adjusted that the paper is stretched just the right amount and "tempered" to fit properly, lie smoothly and dry flat, giving the lids a finished appearance. Such are the manipulations through which a common paste-board box must pass. Besides these, it must be labeled. A label may be pasted on, or it may be printed on the end of the box itself, and for this latter purpose an adaptation of the common job-printing press has been evolved.

MAKING PRINTED CARTONS.

So much for boxes which are covered. Besides these there are thousands of cartons made of more flexible, but tougher, stock, having a finish that will take printing, and present a handsome appearance. This stock is fed into a scoring and printing press, which cuts out the cartons, scores them and prints the sides and the label on the ends. Each revolution of the press produces six cartons, delivered in the flat, scored for folding, which are then cut apart with shears. These cartons, being of lighter stock, are corner-stayed by means of machines which cut small lengths of wire from coils and insert them as staples, six being used on each carton, which then drops, finished, upon a conveyor belt, and is transported to the packing department.

A NEW RUBBER GOODS FACTORY IN BRAZIL.

According to consular reports, after the present war, a large American concern, holding a concession from the Government of Brazil, will build an important rubber goods factory in Rio de Janeiro.

NEW SWEDISH RUBBER FACTORY.

A new factory which will manufacture rubber goods is under way at Landskrona, Sweden. It is being erected by the Aktiebolaget Landskrona Gummifabrik.

Scientific Lighting in the Rubber Factory.

By A. L. Powell, Edison Lamp Works of the General Electric Co.

THE importance of an efficient lighting system in the rubber factory cannot be overestimated. It is to the interest of the employer as well as the employe that the most up-to-date methods be adopted and that nothing be overlooked to provide the best facilities. The old-time carbon lamps are now as out of date as the kerosene lamps and open-burner jets which were used in the early days. Lighting has assumed almost as great an importance as the cost of labor and materials. It has been found that an actual increase of 15 per cent in output has followed the installation of a modern system equipped with the Mazda, or some other modern improvement of the old-fashioned carbon lamp. If the lighting is poor or inadequate, the workman will be less efficient. Good lighting is reflected in the faces of the operators, in the form of healthful, buoyant spirits. Bad lighting is irritating because it makes it difficult to see, and strain is involved in the efforts of workers to adapt themselves to unnatural conditions. Any plant manager knows that the experienced or trained man is an asset not easily replaced. He becomes incapacitated at the very time he should be yielding the biggest return on the investment made in training.

In line with the foregoing a scientific system for lighting a rubber shoe factory is outlined. Upon examination it will be evident that these suggestions also apply to nearly all lines of rubber manufacture. Thus, the lighting for the wash-room, mill-room and calender-room apply in all lines. So, too, in cutting, in making-up and in packing there are the same problems. In other words, the lighting plan designed for the rubber shoe factory is applicable with slight modifications to tires, clothing, druggists' sundries, mold work, specialties, in fact to all lines.

THE WASH-ROOM.

The band saw used to cut the crude rubber should be so clearly illuminated that there is no liklihood of accident. The writer encountered one case where a fairly high-powered lamp without reflector was placed about eye-level, close to the saw. This must have been most trying to the eyes of the workman and it was really good luck that he had not been seriously cut at some time. Everyone knows the blinding effect of a bright light source and with this lamp in close proximity to the saw, there must have been many occasions when the swiftly moving

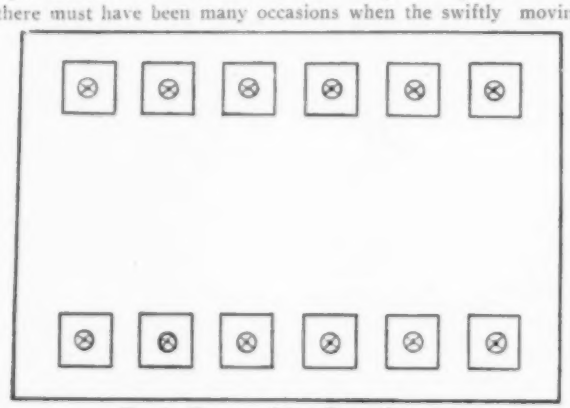


Fig 1—Typical Mill-Room Layout.
⊗=200-Watt Mazda C Lamp in RLM Standard Dome Reflector.

blade was indistinct, if not totally invisible. Such conditions must be watched and avoided.

In washing there are no close demands on vision. It is merely necessary to provide sufficient light to load the crude rubber in the mills and make occasional adjustments. The material is handled in bulk and safety, really, is the determining factor. General illumination of a low intensity will be adequate, although, if feasible, units may be placed near the machines.

THE MILL-ROOM.

The mills are frequently arranged in rows along the sides of the room. If a row of outlets is located above them and lamps equipped with dome reflectors which give a fairly wide distribution of light, then the maximum light will be provided where most needed and the spread light will take care of the center of the room. A typical case might be such as shown in Figure 1. This room, 40 feet wide, has mills along the two sides on 10-foot centers; 75-watt Mazda lamps in RLM dome reflectors placed close to the 12-foot ceiling, spaced as indicated, will give excellent illumination. In cases where fairly uniform illumination is desired throughout the entire room, if modern, efficient equipment is employed, a suitable intensity will be obtained when one-quarter to one-half-watt per square foot of floor area is used.

COMPOUNDING-ROOM.

The room devoted to this work should be fairly well illuminated by the general system, allowing at least ½-watt per square foot of floor area. Good lighting here will prevent errors in the mixture and be a paying investment.

COATING AND CALENDERING.

As the material passes over these machines, it must be watched for defects and care must be taken to see that the coating is being applied in the correct manner. Good lighting will make this work easier and more certain as to results. If machines should be located as indicated in Figure 2, which is typical of some conditions, then a general lighting system as shown in the plan will give good illumination on both ends of the machine and at the same time illuminate the entire area in a most satisfactory manner. This particular arrangement assumes the use of 200-watt Mazda C lamps in RLM standard dome reflectors on centers approximately 20 by 20, placed as close to the ceiling as practicable. If the room is not so arranged or there is a multiplicity of shafts, belts and the like, precluding the use of general illumination, then lighting outlets should be located at the ends of the machines. If the lamps are equipped with angle type reflectors, they will give the maximum illumination on the vertical surface or in other words on the material as it passes over the rolls.

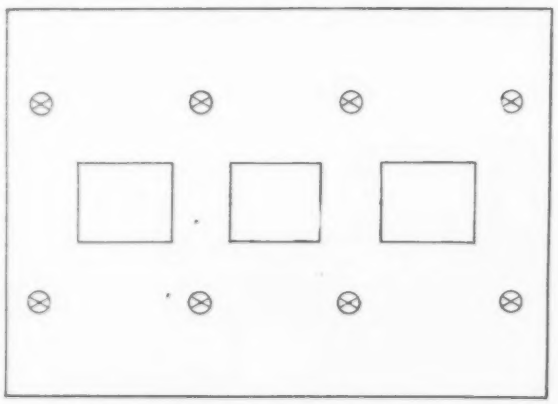


Fig. 2—Typical Layout for Calenders.
⊗=200-Watt Mazda C Lamp in RLM Standard Dome Reflector.

SOLE-ROLLING MACHINES.

The center portion of most of these machines extends practically to the ceiling and a symmetric arrangement of outlets would probably cause bad shadows. It is, therefore, desirable to have outlets at both the front and rear of the machine approximately as indicated in Figure 3. Relatively small lamps can be used with deep bowl reflectors to direct the light on the work. Such an arrangement will enable the operators to make adjustments with facility and gage or inspect the stock accurately.

SOLE CUTTING.

The operators on this process are working rapidly with sharp knives and if the artificial light is of a character that is not well suited, the danger of cutting one's self is increased. It is well, therefore, to supply a fairly high intensity of evenly distributed light from units equipped with proper reflectors to shield the eye and hung well out of angle of view. The scheme pictured in Figure 4 will prove entirely satisfactory. It will be

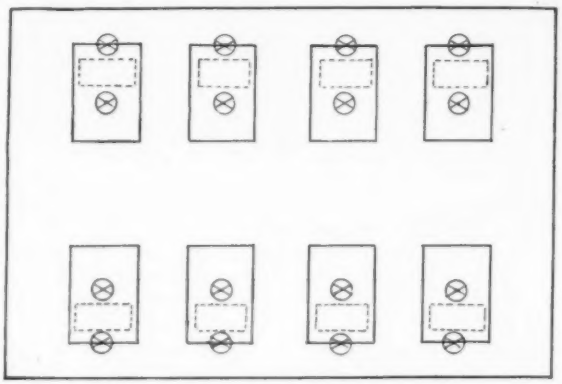


Fig. 3—Typical Layout for Sole-Rolling Machines.
⊗=25 or 40-Watt Mazda Lamp with Deep Bowl Reflector.

noted that this gives the maximum illumination at the ends of the boards or tables where the workmen stand and yet does not confine the bright illumination to a small circle, which is quite trying to the eyes. A row of the same units on slightly wider spacings is suggested for the center of the room. These would give good general illumination when the tables were not in use. All the lamps should be hung as close to the ceiling as

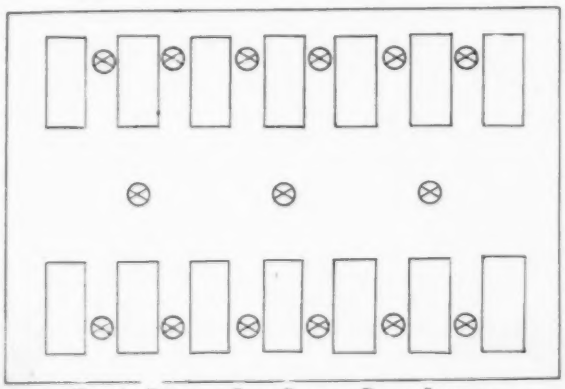


Fig. 4—Typical Sole-Cutting-Room Layout.
⊗=75-Watt Mazda C Lamp in RLM Standard Dome Reflector.

possible. This is assuming that ceilings in general do not run over 12 or 14 feet in height.

CUTTING LININGS.

It would seem to be a rather difficult matter to get sufficient light beneath the head of the presses from an overhead unit, but experience has shown that a moderate intensity of well diffused general illumination meets the conditions in an excellent manner. A typical case is pictured in the night photograph Figure 5. No drop lamps are used, but 100-watt Mazda C

Fig. 5. Typical Overhead Illumination of Presses, Eliminating Shadows.

lamps in dome type steel reflectors are used on 12-foot centers close to the ceiling. Absence of drop cords makes a neater appearing shop.

UPPER CUTTING.

A high intensity of general illumination is advisable in this part of the plant. Work is done with sharp knives and must be cut accurately to line. It is advisable to supply approximately 1 to 1¼ watts per square foot of floor area. A splendid example of the application of this method of lighting is given in the night photograph, Figure 6. Every board and bench is clearly

Fig. 6. Typical Overhead Illumination of Upper-Cutting Room, Eliminating Shadows.

visible and there are no annoying shadows or bright light sources hung low to fatigue the eye.

MAKING-UP ROOM.

Here also the high intensity general lighting system should be applied. This is far more desirable than the system used in many instances of drop lamps hanging close to the racks. A typical layout might be such as that shown in Figure 7. This implies the use of 100-watt Mazda C lamps in dome reflectors on approximately 10-foot centers. In lighting work of this character it is essential to supply an intensity so that the most diffi-

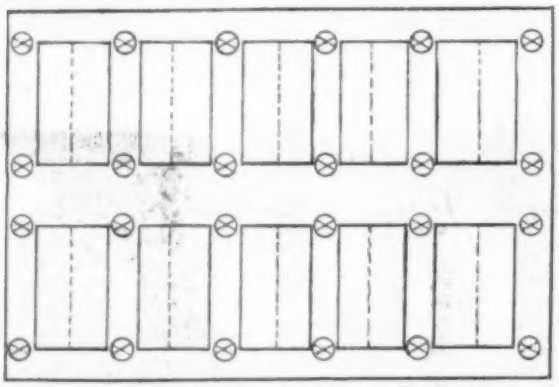


FIG. 7—TYPICAL LAYOUT MAKING-UP ROOM.

⊗=100-WATT MAZDA C LAMP IN RLM STANDARD DOME REFLECTOR.

cult operation can be performed with ease. Skiving is no doubt the step of manufacture which falls under this classification and with a scheme such as outlined, it can be readily accomplished.

VARNISHING AND VULCANIZING.

Here again the work is more or less handled in bulk although it is practically a finished product. There are no demands for close vision and a low intensity of general illumination will suffice. This can be supplied with 200-watt lamps on 20-foot centers if the ceiling is high, or 100-watt lamps on 14-foot centers or 75-watt lamps on 11-foot centers in the case of a low ceiling.

INSPECTING AND PACKING.

To prevent defective material getting in the hands of the customer, it is well to have this room brightly lighted so that all imperfectations are clearly discernible. The high intensity of general illumination from 100-watt lamps on approximately 10-foot centers is essential. Where piles of material extend close to the ceiling, outlets should be located with reference to these so that bad shadows are eliminated.

Analysis of Antimony Pentasulphide.

By D. Repony.

AFTER having tried to analyze antimony pentasulphide, following the known methods, in no case could perfect results be obtained. Either the method required too much work or was not in accordance with the need of the rubber manufacturer. By most methods the main object is to determine the total antimony content. It is, however, altogether wrong to value the antimony pentasulphide by high content of antimony, the essential thing being that the product should show a high percentage of antimony pentasulphide.

Commercial antimony pentasulphide is produced by treating the mineral stibnite with sulphur and lime, obtaining calcium thioantimonate, which is decomposed by sulphuric acid into antimony pentasulphide and calcium sulphate. After the antimony compound is washed with water to remove the free acid and some of the water-soluble calcium sulphate, a large quantity of calcium sulphate still remains with the product. When, however, caustic soda is used in the reaction instead of lime, the antimony obtained is free from calcium sulphate, providing the product has been thoroughly washed. Thus the presence of calcium sulphate must not be considered as an adulterant but as a by-product of the reaction. The writer has found, also, all kinds of adulterants admixed with the antimony. The adulterants are mostly red oxide of iron and iron silicates, such as red clay, whiting and barytes. Therefore, to analyze for adulterants is considered very essential.

Before any attempt is made to analyze antimony submitted for rubber compounding it should be tried practically in some of the most important rubber compounds, replacing the same quantity of satisfactory lots previously used, and the rubber compound be subjected to a series of different heats of vulcanization. Should the rubber compound not change color during the vulcanization at 310 degrees F., it is probable that the antimony will show satisfactorily on aging. Should the color change on vulcanization at the above temperature and also at lower heat, further consideration will depend very much upon the price quoted and the quality of the rubber goods in which it is to be used. In cheap compounds generally the same shade of red which is obtainable by poor antimony can be readily duplicated with red oxide of iron. Should the antimony show satisfactorily in rubber compound under the heat of vulcanization, the next thing is to prove that it contains some adulterant.

TEST FOR ADULTERANTS.

Take about five grams of the sample in 100 cc. of ten per cent hot caustic soda solution, and stir with a glass rod on a steam bath till no red particles can be observed; this usually requires ten minutes. Pure antimony should dissolve completely. Any red powdery residue indicates an adulterant, such as red oxide of iron or iron silicates. A white residue indicates, in most cases, calcium sulphate, which can be readily confirmed. If the residue is not soluble in cold water it is antimony tetraoxide, whiting, barytes, silica, etc.

The method described below for the analysis of antimony pentasulphide yields satisfactory results from the point of view of the rubber manufacturer, and affords the analyst partial information with the least work, or, where time and facilities are available, the complete analysis may be effected.

METHOD FOR COMPLETE ANALYSIS OF ANTIMONY PENTASULPHIDE.

The antimony should be neutral and about 420 specific gravity. The crimson antimonies are mostly of slightly acid reaction. However, the acid content must be in any case not higher than 1/100 of one per cent. The acidity is determined qualtitatively by wetting a little of the sample with water and testing it with litmus paper. The quantitative amount of the acid contained in the sample should be determined in the following manner: Take two grams of the sample, place it in filter, and wash it with water till the washing water is neutral; then titrate the obtained solution with 1/10 normal caustic soda, using phenolphthalein as indicator. Antimony containing more than 1/100 of one per cent of free acid should be rejected, as this is apt to cause blisters during vulcanization, especially in such rubber compounds as contain carbonates. Crimson antimony very seldom contains free sulphur. The amount of free sulphur in orange antimony ranges from none up to 30 per cent, the usual amount being between 15 and 20 per cent.

To determine free sulphur place five grams of the sample in a thimble of filter paper in such manner that the solvent during extraction cannot splash out any of the antimony. Fresh redistilled carbon disulphide must be used as solvent, and the extraction be continued for ten hours; this should be done over night.

The following precautions should be noted. Carbon disulphide when not freshly distilled usually contains much free sulphur, and if used in extracting will lead to false results in the analysis. Also carbon disulphide readily decomposes under the influence of light, especially during boiling. The writer has observed that this result during day-time extraction is variable,

while in night extraction it is very constant. For example, crimson antimony which has shown perfectly free from free sulphur during night-time extraction with fresh redistilled carbon disulphide, gave during day extraction a variable result as high as four per cent. Following the night extraction the carbon disulphide is evaporated to dryness and the residue of free sulphur considered as the correct amount from the antimony present. The extracted sample is dried for about one hour at 60 degrees C., weighed and preserved for further analysis.

DETERMINATION OF MOISTURE AND WATER OF CRYSTALLIZATION.

The moisture in antimony is usually very small in amount although the water of crystallization present may run as high as 15 per cent. The amount of water of crystallization is always in proportion to the content of calcium sulphate. The water of crystallization is not readily volatilized, requiring at least six hours at 100 degrees C. to expel it completely if a vacuum is not used. To avoid volatilization of free sulphur it is better to use the sample which obtained from the free sulphur extraction. For example, if from five grams one gram of free sulphur has been extracted, and the antimony weighs 3.90, take .78 which is equal to one gram of the original substance, place it on a weighed watch glass, spreading the sample over a large area, and dry it at 100 degrees C. to constant weight. If the resulting weight is .74, then the moisture and water of crystallization is six per cent.

DETERMINATION OF CALCIUM SULPHATE, ADULTERANTS, AND ANTIMONY OF OTHER COMBINATION THAN ANTIMONY PENTASULPHIDE.

It is seldom that the antimony contains a number of different substances in the same sample, therefore a qualitative test may be omitted and quantitative analysis proceeded with. Since calcium sulphate is the material most frequently to be determined, and the work requires much time, it is a good plan to shake a small amount of the original sample with water, filter off the solution, and test with barium chloride solution. If no precipitate is obtained the antimony is ready for further investigation; otherwise proceed as follows:

Take the equivalent of one gram of the sample which has resulted from the free sulphur determination, place it on filter paper, wet it with a small quantity of alcohol and wash it with cold water. Use a glass funnel with a cock so that the wash water passes through very slowly allowing enough time to act upon the calcium sulphate. After about 200 cc. of water has been used, occasionally test with barium chloride solution a few drops of the wash water dropping from the funnel and proceed with the washing till the water-soluble calcium sulphate has passed completely into solution. Transfer the total wash water to a weighed beaker, evaporate it to dryness on steam bath, and dry it at 100 degrees C. to constant weight. This residue represents calcium sulphate.

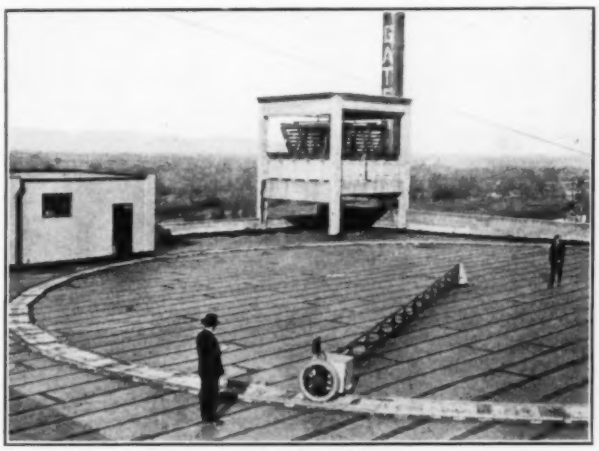
After extraction of the calcium sulphate, the antimony is washed through a small hole in the bottom of the filter paper into a beaker. Allow it to settle, pour off the clear water and treat the antimony with approximately 100 cc. ten per cent caustic soda solution, stirring it for about 10 minutes on steam bath. If the antimony passes completely into solution, further analysis in this group is not required. If any residue is left, it may represent a complex mixture of adulterants, but in most cases it represents only a single substance.

Allow the residue to settle, pour off the clear solution, stir again with about 50 cc. water, transfer to filter, and wash with water till the reaction is neutral. Through a small hole in the bottom of the filter paper wash the residue completely down with water into a weighed beaker. Allow residue to settle, pour off the clear water, and evaporate the remaining water and residue to dryness, and dry to constant weight. This residue represents the amount of total adulterant of antimony tetraoxide. Red color of residue indicates red oxide of iron or iron silicates, which are the most frequently used adulterants. A white residue indicates barytes, antimony tetraoxide, whiting or magnesia carbonate, or silicates. To learn the true composition of the residue, test it qualitatively in the usual way.

In the whole course of analysis never use a platinum crucible as there is danger of mistaking the antimony tetraoxide for barytes or some other mineral filler and when the antimony tetraoxide is ignited with filter paper in platinum some of the antimony becomes reduced and will alloy with the platinum.

TIRE-TESTING SPEEDWAY.

A mile-high speedway, and the only one in the world for testing half-soled tires is that of the Gates Rubber Co. on one of their large factory buildings in Denver, Colorado. The machine consists of a long arm revolving in a huge circle, on the end



GATES' TIRE-TESTING TRACK.

of which is attached the tire. A weight equivalent to that of a heavily-loaded machine is suspended in such a way that the tire itself carries the load. The tire travels on a half-mile track, which is first a stretch of cement trackway on which it attains a speed of 35 miles an hour. It then strikes a sandy stretch which causes it to jump and skid. Then it traverses an imitation brick roadway, following which it plunges into water and mud. By way of variety an incline representing a rough mountain road is included with a 45 per cent slope. Thus, the tire continues its journey all day and every day until it has given the maximum amount of mileage. By this means, if defects exist they are discovered, and promptly remedied.

MORGAN & WRIGHT GET LARGE SHIPMENT OF RUBBER.

What is said to be one of the largest single-lot shipments of rubber ever received in America was recently landed at San Francisco by the S. S. *Siberia Maru* from Singapore and transferred to a train of 26 cars for shipment overland to Morgan & Wright, Detroit, Michigan. The shipment weighed 2,240,000 pounds and represents a portion of the accumulated crude rubber held in the Far East by the war-time embargo on importations of this material.

TIRES TO BE MADE IN SIZES NEEDED.

The National Automobile Chamber of Commerce, New York City, states, under date of March 21, 1919, that pneumatic tires of all sizes will be available for cars and rims already made or to be made, and that the manufacturers will not discontinue any particular size on a fixed date, as was at first anticipated. The sizes of the rims and tires in actual use or to be built will govern tire production.

What the Rubber Chemists Are Doing.

NATURE OF THE VULCANIZATION PROCESS.[1]

THE following observations are condensed from the remarks of Dr. G. Van Iterson on the nature of the vulcanization process.

The investigations of the Institute were made primarily for technical purposes, but offer an opportunity for some theoretical considerations. In what follows, the results of others are taken into account but the object is not completeness in every direction.

1. A theory on the nature of the *hot vulcanization process*—and it is that with which I intend to deal exclusively—will have to reckon with the following established facts:

a. The process proceeds additively, and formation of sulphureted hydrogen is subordinate.

b. Sulphur is transferred into the so-called "combined" state. It is then practically insoluble in the usual solvents.

c. The "binding" may *practically* be deemed "complete," the opinion that part of the sulphur remains uncombined as "free" sulphur having been refuted.[2]

d. Very small quantities of combined sulphur make an important change in the properties of considerable quantities of rubber. Rubber with one per cent combined rubber is entirely different from a non-vulcanized rubber-sulphur with one per cent sulphur. The usual solvents do not dissolve non-vulcanized rubber from the vulcanized.

e. The change in the properties of rubber during vulcanization is perfectly continuous. Change of mechanical properties varies with the amount of sulphur being taken up. No boundaries can be delineated between prevulcanization, undervulcanization and overvulcanization.[3]

f. The velocity of combining has a coefficient of temperature between two and three.[4] The binding of sulphur begins much below the ordinary vulcanization temperatures.[5]

g. The velocity of combining of sulphur varies considerably for different varieties of rubber under equal conditions of temperature, mixing, molding, etc.[6]

h. The velocity of vulcanization is strongly influenced by some inorganic and organic compounds. This influence, especially that of some organic compounds, is entirely catalytic.[7] Acids act retardingly, alkalies in weak concentrations, acceleratingly.[8]

i. First latex plantation rubbers on being vulcanized under constant conditions produce mechanical properties which strongly correlate with the vulcanization coefficients.[9] With accelerated vulcanization, by catalyst or by excess of sulphur, or under greatly deviating conditions, this correlation ceases.[10]

j. Powerful mechanical treatment of the raw rubber changes the mechanical properties of the vulcanized product, but not the velocity of vulcanization.[11]

2. There is no agreement as to what is the maximum quantity of sulphur which can be combined during vulcanization. A review of the results of various investigators leads the author to conclude that 32 per cent is probably not the maximum of sulphur which can be "combined" with caoutchouc, meaning such sulphur as cannot be extracted with the ordinary extraction liquids and under circumstances whereby all sulphur is removed from a non-vulcanized rubber-sulphur mixture.

3. An unsettled problem is that of the reversibility of the vulcanization process. The fact ascertained by Spence and Young, *l. c.*, that no free sulphur is extracted from a mixture with ten per cent of sulphur having previously been vulcanized for a long time, even when extracting for 48 hours, is a strong indication that there is no question of a reversibility by ordinary extraction. Bary and Weyndert[12] think themselves justified in concluding the reversibility from the fact ascertained by them, that sulphur can be extracted from vulcanized rubber, previously deprived by extraction of free sulphur and then heated in a carbon dioxide atmosphere. Unpublished experiments carried out at the Institute make it evident that on heating vulcanized rubber free from uncombined sulphur, a very important regeneration occurs, characterized by the product becoming plastic without sulphur being transformed from the combined into the free state. On further continued heating a part of the rubber is transformed into the soluble form and through this, part of the sulphur becomes "soluble."

4. It has not been certainly determined whether the combined sulphur takes the place of the bromine during bromination of vulcanized rubber.

5. Opinion is not settled as to the course of the combining of sulphur with the hot vulcanization.

Fol and Van Heurn found the following vulcanization coefficients after vulcanizing at 50 pounds with varying quantities of sulphur.

Mixture. (*Parts S on 100 parts rubber.*)	*Vulcanization Coefficient.*
2.57	1.08
5.27	2.38
8.13	3.01
11.11	4.06
14.30	6.85
17.70	7.68
21.20	8.32
25.00	9.66

Considering that about half the added sulphur was combined at the close of the vulcanization in the above table, it appears that for mixtures of 20 parts sulphur and less there is approximate proportionality between the vulcanization coefficient and the quantity of added sulphur.

6. Judging about the course of the combining of the sulphur, one has to take into consideration that at the temperatures of vulcanization in use in factories, only a limited quantity of free sulphur is being taken up by the rubber. Skellon has shown that at about 130 degrees C. ten per cent free sulphur can be taken up very rapidly in non-vulcanized rubber, by diffusion or adsorption.

7. For the explanation of a rectilinear course of the curve representing the binding of sulphur with the duration of the vulcanizing process one encounters difficulties when a rectilinear course is assumed for all sulphur binding lines. In that case a different rectilinear course will have to be explained for different additions of sulphur. Now the straight line points to an independence of the velocity of binding of the concentration of the free sulphur, while the different direction of straight lines would show precisely the dependence on increasing additions of sulphur. It is very probable that the rectilinear course with ten parts of sulphur and the doubly bent course with higher sulphur concentrations, must be attributed to the same cause, namely, an auto-catalytical acceleration of the process. In order to ex-

[1] "Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry." Part VII, page 239.

[2] Spence and Young, "Kolloid-Zeitschrift," 1912, page 28, and 1913, page 265. Skellon, "The Rubber Industry," London, 1914, page 172.

[3] Part VI, page 216.

[4] Bourn, "The India-Rubber Journal," 1913, page 120; Spence and Young, *l. c.*; and Fol and Van Heurn, Part VI, page 187.

[5] Hinrichsen and Kindscher, "Kolloid-Zeitschrift," 1911, page 245.

[6] Part V, page 168.

[7] Stevens, "Kolloid-Zeitschrift," 1914, page 91; Gottlob, "Gummi-Zeitung," 1916, page 307; and Part VI, chapter 40.

[8] Martin, "The Rubber Industry," 1914, page 205.

[9] Part V, chapter 40.

[10] Part VI, chapter 60.

[11] Spence and Ward, "Kolloid-Zeitschrift," 1912, page 274; and Part VI, page 181.

[12] "Comptes Rendues," 1911, page 676.

plain the curved course of the binding of sulphur the supposition could be made that the accelerating action diminishes on continued vulcanization, but it seems more plausible that the catalytic acceleration surpasses by far the auto-catalytic one (here 7½ per cent of sulphur), the latter, therefore, acting only very slightly on the process.

In the remainder of his paper the author elaborates two working hypotheses on the vulcanization process. His suppositions are as follows:

First. That mentioned originally by Bernstein[13] as a possibility. According to that conception, the colloidal sulphur formed on heating the sulphur solution, would unite to one complex with the considerably depolymerized rubber during the vulcanization. This complex would be insoluble in the ordinary solvents for rubber.

Second. That an "active" sulphur modification exists and that it combines chemically with a part of the rubber to a compound insoluble in the usual solvents, and that the latter afterwards combines "colloidally" with the remainder of the rubber to an insoluble complex.

For the author's development of these hypotheses the reader must be referred to the original paper.

SOME PROBLEMS OF THE PLANTATION RUBBER INDUSTRY.

The relative advantages of the various methods for coagulating rubber latex employed in the plantation rubber industry are discussed by H. P. Stevens under the above title in the "Journal of the Society of Chemical Industry," June 29, 1918, page 237R.

The coagulation of latex was studied in Ceylon by Parkin who recommended the use of acetic acid. His choice of an organic acid in preference to a mineral acid was fortunate, but he considerably overestimated the proportions of acid necessary for coagulation. At this time some estates, for fear of using too much acid, were doing without acid altogether and relying on the so-called natural coagulation. This method of "natural" or spontaneous coagulation yields a satisfactory product, but at that time it was neither economical nor convenient. More recently, the method of spontaneous coagulation has been revised and modified by allowing the coagulation to be carried out under anaerobic conditions. It is known that when latex is coagulated spontaneously and exposed to the air the interior of the mass acquires an acid reaction brought about by lactic acid fermentation, while the surface develops a yellowish alkaline slime in which coagulation is very imperfect.

According to the most recent work, carbon dioxide gas given off from the mass is retained on the surface in the anaerobic process, and this prevents the purtrefactive changes which give rise to the alkaline slime. The evidence at present appears to be in favor of an enzyme action as the primary cause of coagulation, although sufficient lactic acid soon develops to bring about coagulation in the ordinary manner. If the anaerobic process can be relied on to produce regular and complete coagulation within twenty-four hours, the process has a future and should eventually displace coagulation by acetic acid, at any rate for bulk coagulation in the manufacture of crêpe rubber.

The author's original studies showed that rapid and complete coagulation could be obtained with a very small proportion of acetic acid—about one part per thousand of diluted latex. The coagulation was clear and the resulting rubber pale and more even in appearance than that produced by spontaneous coagulation. With the same end in view, small quantities such as one to two parts per 1,000 of sodium bisulphite are commonly added to the latex which inhibits the action of the oxydase present. This would otherwise produce a darkening of the surface of the coagulum, and eventually dark streaks or patches in the finished rubber. The bisulphite is without appreciable effect on the quality of the rubber, but it is questionable whether a pale, even-colored rubber is the best that can be produced, whatever method be adopted to prevent the darkening. This pale rubber cures more slowly than a darker and less attractive-looking material which has been prepared by setting the coagulum aside for a few days to putrefy before making and crêping. The putrefactive bases so formed accelerate vulcanization.

It is often stated that rapid-curing rubber is of better quality than the pale-colored product. To produce the technical effect of vulcanization it is necessary to heat the mixture of rubber and compounding ingredients, and it is argued that the heating detracts from the beneficial effect of vulcanization. The argument is based on the known fact that heating rubber by itself to vulcanizing temperature damages it. If this is so, the shorter the period of heating the better the product, provided an equal degree of vulcanization is produced. There is some evidence of a general nature to support this view, but conclusive experiments to this end have not been published.

Similar considerations may be applied to organic accelerators added to the rubber in the course of manufacture. One authority goes so far as to state that a good accelerating agent must not only facilitate vulcanization but should also toughen rubber and render it immune from deterioration.

Variation in rate of cure of *Hevea* rubbers must certainly be ascribed to a variation in the nature and proportion of the non-caoutchouc ingredients. The insoluble nitrogenous matter commonly referred to as the protein matter facilitates the combination of the rubber and sulphur, as is shown by the effect of its removal from the rubber. On the other hand, the putrefactive bases are far more active. It has been suggested that the fresh latex contains a substance having an accelerating action, presumably in addition to the insoluble nitrogenous matter and the putrefactive bases. It has not, however, been isolated, and nothing is known of its composition.

The ever-increasing supplies of plantation rubber have rendered the collection and marketing of the inferior grades of wild rubber unprofitable, but the supplies of fine Pará have not diminished, and this rubber has for years commanded a premium over the best plantation grades. This is the more remarkable as the former requires to be first washed and dried, in which process it loses about 20 per cent of its weight. Standard plantation, on the other hand, can be used for the majority of purposes without preliminary treatment. Those who have made comparative vulcanizing tests agree that fine Pará does not give a stronger vulcanized product than plantation, nor does it vulcanize very rapidly. It is claimed that fine Pará is less variable than plantation, but this is open to question if fine Pará be compared with regular consignments of any of the best marks of plantation. It is also admitted that fine Pará shows some variation.

The explanation for the preference given to fine Pará is probably to be found in hesitation on the part of manufacturers to employ plantation rubber for purposes where the cost of the rubber is a relatively small item in comparison with the value of the product, as, for example, in the case of a submarine cable, on the lasting qualities of which no chances can be taken.

AZO PROCESS ZINC OXIDES.

Lead-free zinc oxide is essential in the production of clear white rubber goods although the presence of small percentages of lead oxide is not objectionable in zinc oxide for rubber work where color is not important.

An American company has perfected a new process which accomplishes results previously considered impossible in the manufacture of zinc oxide. By this process zinc oxide of exceptional purity and physical properties is uniformly obtained. Manufacturing facilities have recently been extended to permit these lead-free and low-leaded oxides to be offered to the rubber trade.

[13] "Kolloid-Zeitschrift," 1913, page 273.

ESTIMATION OF RESIN AND IMPURITY IN BALATA AND GUTTA PERCHA.

Notes on the estimation of resin and impurity in balata and gutta percha by P. Dekker are abstracted as follows by the "Journal of the Society of Chemical Industry," volume 37, 341A:

Acetone is the most trustworthy solvent for the extraction of balata and gutta percha. Ether dissolves a part of the gutta or balata and so gives high results, while with alcohol the gutta becomes plastic on account of the higher boiling point of the solvent, and the extraction is thereby rendered incomplete. When balata is extracted with alcohol a portion of the material insoluble in xylene passes into solution and is included with the resinous matter.

DEPOLYMERIZATION OF RAW RUBBER.

The depolymerization of raw rubber as reported by A. Van Rossem is outlined in abstract as follows by the "Journal of the Society of Chemical Industry," volume 37, 341A:

When rubber is heated for six hours at 130 degrees C. in a sealed glass tube containing air, it melts to a brown syrup, whereas this change is not observed in a vacuum or in hydrogen, nitrogen, or carbon dioxide. With one per cent rubber solutions in xylene, oxidation does not set in until after several hours, commencing first when a certain limit of relative viscosity has been passed. Depolymerization occurs much more rapidly in the presence of oxygen than in that of other gases, oxygen appearing to exert a catalytic effect; the rate of depolymerization depends also on the nature of the solution.

CHEMICAL AND MECHANICAL-TECHNICAL EXAMINATION OF RUBBER.

The following abstract from the "Journal of the Society of Chemical Industry," volume 37, 341A, summarizes a contribution by J. G. Fol:

In order to form a correct judgment on the quality of rubber it is necessary, in addition to making chemical analysis and vulcanization tests, to ascertain whether the various original constituents of the rubber and any substances which have been subsequently incorporated in it, remain in the same relative proportions and can be rediscovered by chemical analysis. Preliminary experiments have led to the following conclusions:—the resin content remains practically constant throughout the various operations, although a slight decrease may sometimes be observed after vulcanization. The proportion of insoluble constituents is decreased by mechanical working. The protein matter is not quantitatively precipitated by the petroleum method applied for the separation of insoluble substances. When free sulphur is present to the extent of several units per cent, it cannot be oxidized quantitatively by nitric acid. The estimation of fillers by boiling with petroleum yielded low results with the mixture investigated (rubber 50, zinc oxide 62, magnesia 13, sulphur 5), as also did the determination of the ash. The viscosity of the rubber is diminished by mechanical working on the washing rolls, and still more by working on hot rolls; this is attributed to a reduction in the molecular complexity. The indirect method for the estimation of rubber in a vulcanized product gives results which deviate several units per cent from the quantity of rubber actually used.

YARN TWIST-TESTER.

Tests can be made on samples from one inch to 20 inches in length with the latest type twist-tester for yarns. The tension of thread between clamps is always the same, being regulated with small weights. As the yarn is unwound, one turn of the handle loosens ten turns of twist, the left-hand clamp is drawn to the left by small weights holding the yarn taut, and at the same time the take-up is registered on a special scale. The take-up, especially on hard-twisted yarns, is a very important factor in determining the size of the single yarn used in making the ply yarn. The spinning twist can be accurately determined by means of a magnifying glass through which the operator can watch the fibers unwind. A similar apparatus for yarn twist testing is also made by Goodbrand & Co., 19 Victoria street, Manchester, England. (Alfred Suter, 200 Fifth avenue, New York City.)

CHEMICAL PATENTS.

THE UNITED STATES.

Process of Treating Rubber Waste.—The process consists of subjecting waste rubber containing cotton to the action of a reclaiming solution consisting of approximately two per cent by weight of sodium hydroxide, and also containing kerosene and resin in the approximate proportions of five pounds of resin and 15 pounds of kerosene to 100 pounds of waste rubber, maintaining the temperature of the reclaiming solution at about 300 degrees F., and agitating the solution and rubber waste. (John F. Johnston, Barberton, assignor to The Electric Rubber Reclaiming Co., Akron, both in Ohio. United States patent No. 1,291,535.)

Cotton Containing Rubber Composition.—A product prepared from rubber waste containing cotton and comprising reclaimed rubber containing substantially uniformly distributed cotton fiber which has been subjected to the action of a caustic alkali reclaimed from the cotton in the waste rubber. (John F. Johnston, Barberton, assignor to The Electric Rubber Reclaiming Co., Akron, both in Ohio. United States patent No. 1,291,536.)

Process for Vulcanizing Rubber and Products.—A process for treating rubber or similar material which comprises subjecting the rubber to beta-dinitroanthraquinone. (Willis A. Gibbon, Flushing, assignor to New York Belting & Packing Co., New York City—both in New York. United States patent No. 1,291,828.)

Adhesive Material.—An adhesive composition for uniting fabric surfaces, consisting of a dextrin, water, and castor oil held in emulsified condition. (Alfred E. Jury, New York City, assignor to National India Rubber Co., Bristol, Rhode Island. United States patent No. 1,292,333.)

THE DOMINION OF CANADA.

Rubber Coagulum.—The process of treating latex or similar material, which comprises subjecting the mass to an hydroxy derivative of a polycyclic member of the benzene series, forming a substance adapted to prevent slime formation and combining a vulcanizing agent with the mass. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,135.)

Rubber Coagulum.—The process of treating a mass of rubber coagulum or similar substance containing a protein and water, by applying to the mass an alcoholic solution of beta-napthol, forming on the surface of the mass a semi-permeable membrane of water-insoluble compound of protein and beta-napthol adapted to prevent passage of colloidal nitrogeneous or similar material, and combining a vulcanizing agent with the mass. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,136.)

Latex Product.—A compound rubber mass produced by vacuum evaporation, containing an insolubilized nitrogeneous compound comprising a substance of the benzene series. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,137.)

Brake Lining.—A brake lining consisting of a body of fibrous material impregnated with the product of the vulcanization of asphalt, red lead, and sulphur. (The Thermoid Rubber Co., assignee of William Dolton Pardoe—both of Trenton, New Jersey. Canadian patent No. 188,392.)

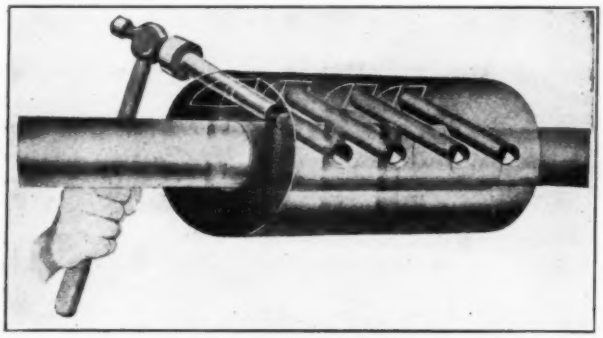
Tire Filler.—A composition of ingredients substantially in the following proportions: soya bean oil, 24 pounds; chloride of sulphur, six pounds; oxide of magnesia, 17½ ounces, and Venetian red, three ounces. (The Universal Tire Filler Co., assignee of Frank A. Hager, both of Portland, Oregon. Canadian patent No. 188,448.)

New Machines and Appliances.

A SIMPLE AND EFFICIENT LINE-SHAFT COUPLING.

A LINE-shaft coupling that is simple yet strong in construction—that will not slip when installed and one that can be applied by means of only a hammer, is shown in the accompanying illustration. It is of the rigid type and obviates the trouble of slipping peculiar to friction grip couplings or poorly fitted keyed couplings.

This coupling is easy to install by inserting the end of each shaft into the bore of the coupling, and hammering the cupped-

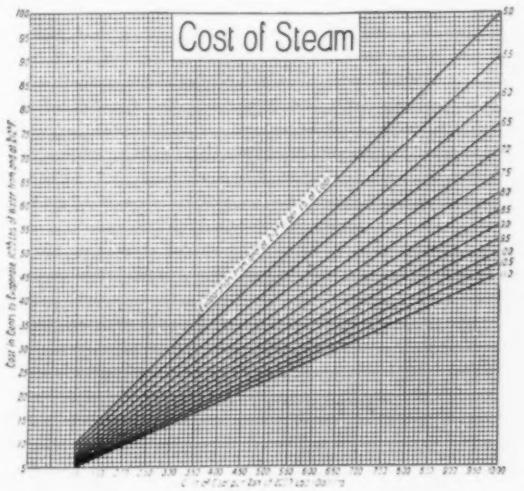


The Pintite Rigid Coupling.

end pins into place. These tempered tool steel pins cut their own seats in the shafts. They also wedge the shafts into the recess provided in the opposite side of the coupling, and so a very powerful driving grip is obtained. (Smith-Serrel Co., Inc., 90 West street, New York.)

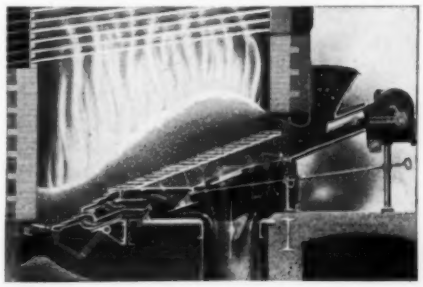
COST OF STEAM REDUCED BY UNDERFEED STOKER.

The accompanying diagram furnishes the power-plant operator accurate information on the cost of coal for generating steam. Knowing the price, the amount of coal burned, and the quantity of water evaporated, the solution is easy. Start with the cost of coal per ton and project vertically, intersecting the oblique line corresponding to the evaporation being obtained from the boilers from and at 212 degrees F., then move horizontally to the left margin, where the cost of coal to evaporate one thousand pounds of water from and at 212 degrees F. is



given. The chart can also be used to determine the evaporation required to generate steam at a certain cost, by reversing the above process.

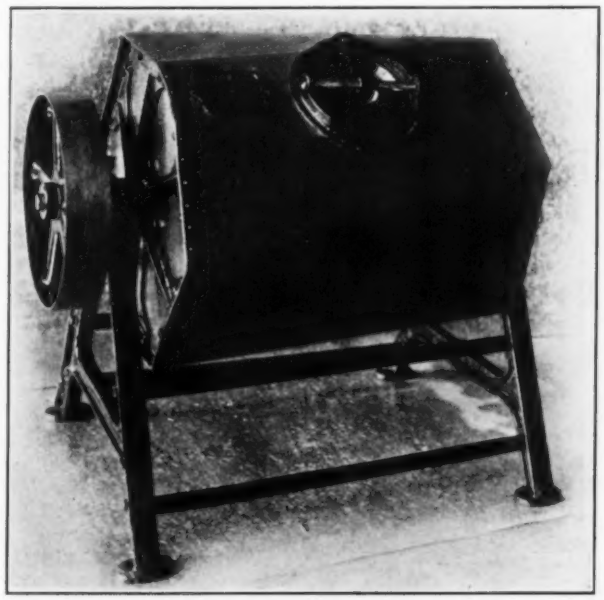
This chart should awaken interest in the relative efficiency of a mechanical stoker as compared with hand firing. The stoker shown in the illustration is the underfeed type in which air is forced into the fuel bed by a fan. A series of corrugated tuyères, overlapping one another, form ribs extending from the hopper on the outside of the furnace to the center of the bed. These rows of tuyères are inclined and separate the retorts that carry the coal from the hopper to the bed. They rest on air-boxes connected with the main air-shaft. The forced draft enters these boxes and distributes itself to the burning coal through these multiple-openings in the tuyères. In other words, the entire furnace bed is fed continuously and evenly with thousands of minute jets of air, which means perfect combustion of the coal and little or no smoke. (Westinghouse Electric & Engineering Co., East Pittsburgh, Pennsylvania.)



Westinghouse Underfeed Stoker.

A NEW HORIZONTAL CEMENT CHURN.

The cement churn here pictured possesses several constructive features that will at once appeal to the maker of rubber cement. It is built along simple yet sturdy lines and with only two bearings that are exposed to wear. The shape of



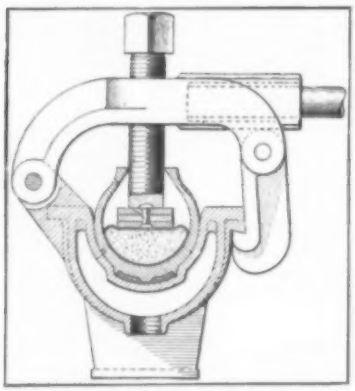
A Novel Cement Mixer.

the barrel automatically works the contents from end to end, and over and over, as the churn revolves, thereby producing a thoroughly mixed solution in the shortest possible time.

The frames of the machine are of channel-shaped cast iron and rigidly supported by four tie-rods. The cast-iron spiders, riveted to each end of the barrel, are provided with journals that support the barrel in the side-frame bearings. The joints in the head of the barrel are riveted, and all joints and seams are soldered inside and outside as a prevention against leakage. The body of the barrel is constructed from triangular, galvanized-iron plates that churn the contents from side to side when the barrel rotates. A brass filler cap, with a lip on each side and a quick-opening clamp attachment, enables the operator to draw off the cement from the top, free from settlings. The machine is furnished with tight-and-loose pulleys and built according to the required capacity. (The Roy D. Quin Co., Willoughby, Ohio.)

THE "WESTERN" RETREADING MACHINE.

The growing interest in rebuilt tires has greatly stimulated the builders of retreading equipment in improving the design of repair vulcanizers. It is claimed that the new machine here illustrated will produce various non-skid tread designs, including the Silvertown ribbed tread. A new feature is the multiple-spring pressure plate and centering blocks that effect an even distribution of the curing pressure.



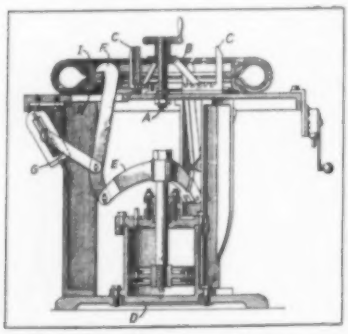
The "Western" Retreader.

There are two molds to a complete outfit, retreading tires from 28 by 3 to 37 by 5. The equipment furnished with each set consists of six lever clamps, two multiple-leaf pressure springs, two sand-bags, one clamp-lever, one matrix bolt-wrench, one ratchet wrench, six centering blocks, four disk globe-valves, and all pipe fittings, etc., ready to connect to steam line. (Western Tire & Rubber Works, 321-323 North Crawford avenue, Chicago, Illinois.)

MACHINERY PATENTS.

MACHINE FOR APPLYING BEAD-CLAMPING RINGS.

BEAD-clamping rings used when curing tires on expansible cores or air bags, are quickly and accurately drawn into place by this machine. The figure is a vertical section through the center of the apparatus that consists of a circular table mounted on three legs at a convenient height for handling the tires. Mounted in the center of the table is a vertical screw, *A*, provided with a threaded nut and a collar, to which three links, *B*, are attached and adjustably connected to slides that terminate in vertical guides, *C*. A piston reciprocating in the cylinder, *D*, supports on its upper end a head with three arms *E*, to which are pivoted vertical arms terminating in hooks *F*. Pivotally connected to the arms are links *G* terminating in spring slides that operate with the piston to control the clamping hooks.



Bead-Ring Clamping Machine.

Lower bead ring *H* is placed on the table by the operator and centered by guides *E*, when a tire containing an air bag is placed upon it and the upper bead ring *I* superposed. Air is admitted to the bag, meanwhile fluid pressure is admitted to the cylinder *D* whereby the hooks *C* engage the tongue of the upper head ring, thus drawing both rings together. When sufficient pressure has been forced into the air bag to properly seat the bag and the lower edges of the tire in the rings, the pressure is relieved and the piston forces the rings downwardly to the final position where they are secured by bolts through the tongues of the clamping rings. The piston is then forced in the opposite direction and the tire with the clamping rings is ready to be placed in the mold. (William C. Stevens, assignor to the Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,289,949.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,290,955. Fabric-hanging machine. S. M. Ford, Bridgeport, Conn., assignor to The Duratex Co., Newark, N. J.

1,291,277. Tread-forming press. G. W. Steele, assignor to Firestone Tire & Rubber Co.—both of Akron, O.

1,291,434. Repair vulcanizer. J. W. Dean, Jr., Pond, Mo., assignor to J. W. Dean, Sr., Pond, Centaur, Mo.

1,291,811. Sponge-trimming machine. J. Ellis, assignor to Featheredge Rubber Co.—both of Chicago, Ill.

1,292,052. Apparatus for manufacturing tires or interliners. W. F. Ray, Chicago, Ill.

1,292,182. Sponge-trimming machine. F. V. Wedlock, Chicago, Ill.

1,293,159. Rubber boot and shoe repair vulcanizer. C. E. Miller, Anderson, Ind.

THE DOMINION OF CANADA.

188,107. Sectional tire mold for use in superposition with other molds in vulcanizing press. J. A. Swinehart, Akron, O., U. S. A.

188,190. Tire-building machine. A. O. Abbott, Jr., and W. B. Norton, assignee of ½ interest—both of Detroit, Mich., U. S. A.

188,367. Core for molding hollow rubber articles. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of R. Benyon, Chicago, Ill., U. S. A.

188,486. Mold for pneumatic tires. E. Hopkinson, New York City, U. S. A.

188,487. Mold for pneumatic tires. E. Hopkinson, New York City, U. S. A.

188,488. Tire-vulcanizing apparatus. E. Hopkinson, New York City, U. S. A.

188,739. Fabric-testing device. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of E. E. A. G. Meyer, Detroit, Mich., U. S. A.

188,870. Rubber-coating machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of R. Holmes, Detroit, Mich., U. S. A.

188,871. Apparatus for making tobacco pouches. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of F. F. Jamieson—both of Montreal, Que.

188,899. Repair vulcanizer. F. Low and W. G. Charleson, assignees of A. S. Mackey—all of Ottawa, Ont.

THE UNITED KINGDOM.

121,239. Apparatus for making golf balls, etc. W. J. Mellersh-Jackson, 28 Southampton Buildings, London. (Revere Rubber Co., 59 Reade street, New York City, U. S. A.)

121,527. Apparatus for stacking tires, etc. Dunlop Rubber Co., 14 Regent street, London, and C. Macbeth, Para Mills, Aston Cross, Birmingham.

121,539. Cutting machine for rubber bulbs. C. Achnach & Co., 59 Wallace street, Glasgow, and P. L. Liddell, 21 King's Road, Prestwich, Lancashire.

THE FRENCH REPUBLIC.

488,830. Improvements in autoclaves. M. E. Douane.

PROCESS PATENTS.

THE UNITED STATES.

NO. 1,292,028. Manufacture of brake lining by vulcanizing starch-powdered rubber-coated asbestos yarns after weaving. C. H. Oakley, Trenton, N. J.

THE DOMINION OF CANADA.

188,139. Manufacturing tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of R. B. Price, Washington, D. C., U. S. A.

188,366. Manufacture of hose. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of H. Z. Cobb, Winchester, Mass., U. S. A.

188,368. Manufacture of hot-water bags, etc. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of R. B. Price, Washington, D. C., U. S. A.

THE UNITED KINGDOM.

121,439. Vulcanizing tire casings. E. Hopkinson, 1790 Broadway, New York City, U. S. A.

THE FRENCH REPUBLIC.

488,936. Manufacture of woven elastic webbing. Manufacture L. X. Pascal.

488,979. Utilization of used or unused pneumatic tires for the manufacture of soles, heels, shanks, and uppers for shoes; of gaiters, saddle-bags, etc.; and more generally of all articles of rubber or rubberized fabric. U. Chandeysson.

Commercial Service

Through our Commercial Service Department, in connection with our Buenos Aires Branch and numerous correspondents throughout the World, we are prepared to supply to merchants and manufacturers reliable information regarding trade conditions in foreign countries; and to aid them in obtaining satisfactory foreign representatives.

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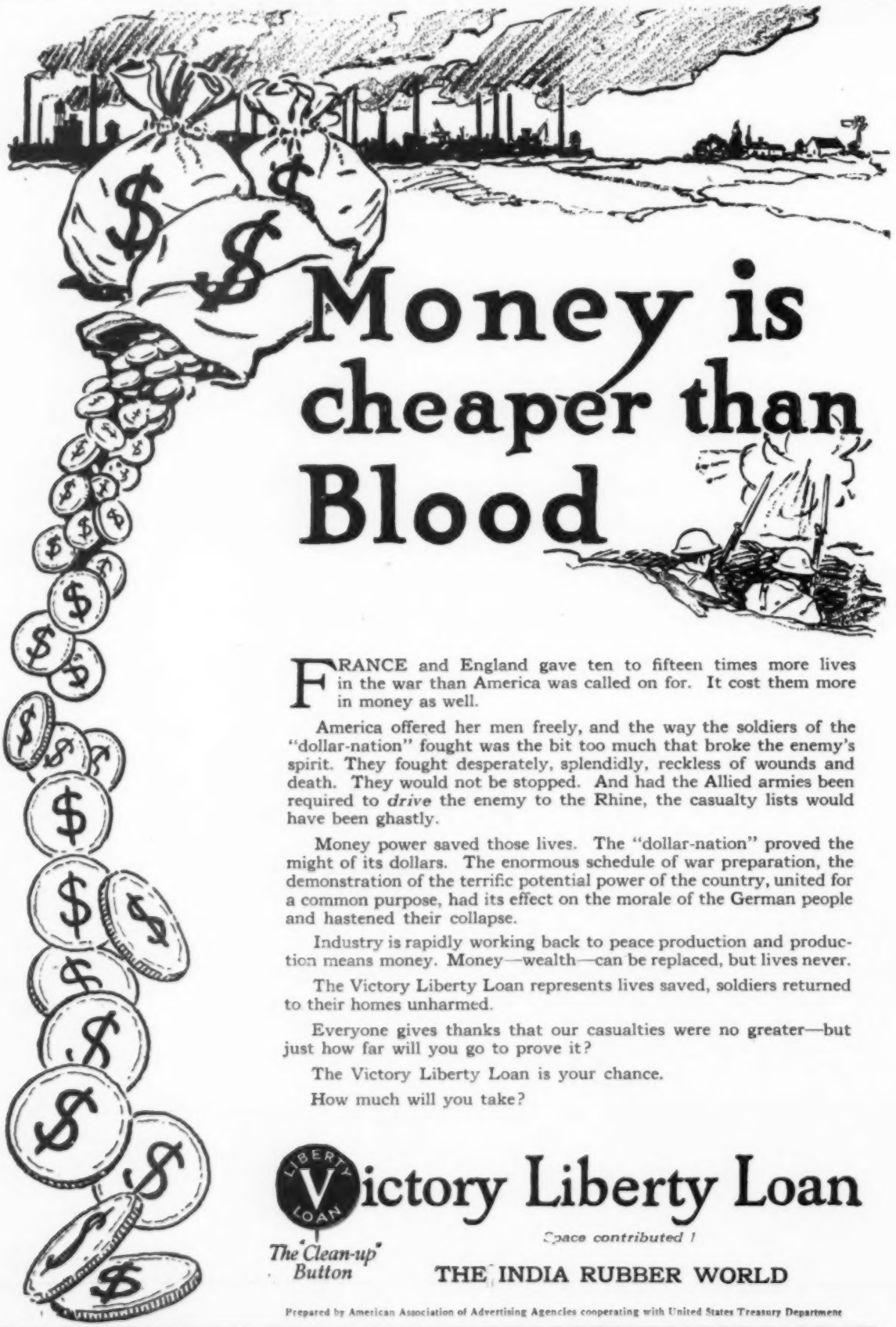
Resources . . Over $250,000,000

Branch at Buenos Aires, Argentina



Money is cheaper than Blood

FRANCE and England gave ten to fifteen times more lives in the war than America was called on for. It cost them more in money as well.

America offered her men freely, and the way the soldiers of the "dollar-nation" fought was the bit too much that broke the enemy's spirit. They fought desperately, splendidly, reckless of wounds and death. They would not be stopped. And had the Allied armies been required to *drive* the enemy to the Rhine, the casualty lists would have been ghastly.

Money power saved those lives. The "dollar-nation" proved the might of its dollars. The enormous schedule of war preparation, the demonstration of the terrific potential power of the country, united for a common purpose, had its effect on the morale of the German people and hastened their collapse.

Industry is rapidly working back to peace production and production means money. Money—wealth—can be replaced, but lives never.

The Victory Liberty Loan represents lives saved, soldiers returned to their homes unharmed.

Everyone gives thanks that our casualties were no greater—but just how far will you go to prove it?

The Victory Liberty Loan is your chance.

How much will you take?

LIBERTY V LOAN

Victory Liberty Loan

The "Clean-up" Button

Space contributed by

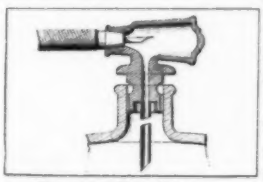
THE INDIA RUBBER WORLD

Prepared by American Association of Advertising Agencies cooperating with United States Treasury Department

New Goods and Specialties.

A NOVEL FOUNTAIN-PEN FILLER.

A CONTRIVANCE to facilitate the filling of fountain pens has recently been invented, which consists of a compressible rubber bulb combined with an extension, also of rubber, having a conical mouth-piece into which the pen is put, and a base section intended to fit snugly over the top of an ink bottle as a stopper. This stopper is fitted with a tube reaching into the ink, and with air-vents at the top. When the rubber bulb is compressed, the air drawn from the pen is forced down the tube, through the ink, up and out through the air-vents, while the ink is forced up into the pen. (Parke J. Flournoy, 50 V street, Washington, District of Columbia.)



Fountain-Pen Filler.

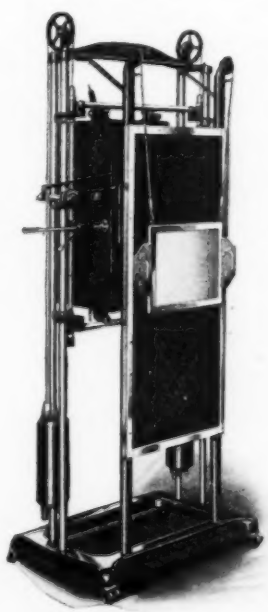
A NEW STYLE OF FOUNTAIN PEN.

Unlike the ordinary kinds of fountain pen, which must be unscrewed in order to fill them, the one shown in the accompanying illustration simply pulls apart in the center, revealing within the presser bar for filling. The extent of the opening is regulated by shoulders on the inner tubing and the holder which engage each other to prevent opening too far. This pen is patented in the United States and Canada. (Laughlin Manufacturing Co., Detroit, Michigan.)

The Laughlin "Safety" Fountain Pen.

RUBBER IN THE FLUOROSCOPE.

The extent of the use of rubber in modern science is shown in one of its more recent adaptations in the lining of the tube-box in fluoroscopes used by Roentgen-ray diagnosticians. In the accompanying illustration the box is in the rear of the long screen in front, only one end being visible. The box itself is made of hard-wood, lead-coated outside and lined with opaque rubber, thus insuring protection from rays to both operator and patient. The fluoroscope is made in both vertical and horizontal form, the vertical one being shown here. (Wappler Electric Co., Inc., 173 East 87th street, New York City.)



Wappler Fluoroscope.

"AUTOGRAPHIC" RUBBERS.

A recent patent provides for the insertion of means for holding a name-plate inside the instep of a rubber overshoe, covered by a transparent pane of celluloid or similar material. This arrangement is provided for when the rubber is manufactured, and any name-plate or card may be inserted under the celluloid through an opening at one end. (Alba C. Booth, Burlington, Vermont.)

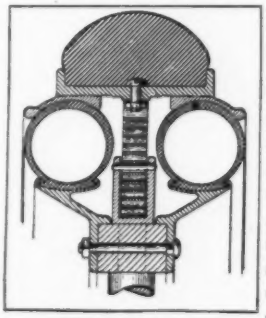
A NEW GAME BALL.

A new ball to be used in playing soccer, basket-ball, and similar games, is covered with a material embodying the good qualities of both leather and rubber and containing some rubber in its composition. This covering is said to be stronger than leather and as resilient as rubber. It is not affected by the weather and may be used on wet ground without injury to the ball, as it is waterproof. It also retains its shape under such conditions and wears better than leather. A rubber bladder of the usual type is used inside. The ball is of regulation size and weight. (Rawlings Manufacturing Co., St. Louis, Missouri.)

"Ruko" Foot-Ball.

"RAYBESTOS" MOLDED CLUTCH FACING.

The newest kind of clutch facing is molded instead of woven. It is said to be a great improvement and is being adopted as standard equipment by manufacturers of automobiles and disk clutches. The company that makes these facings has discontinued the manufacture of the woven type except to fill orders previously in hand for that style of facing. The molded facing is composed of asbestos fiber and rubber. (The Raybestos Co., Bridgeport, Connecticut.)



"Eagle" Wheel.

PUNCTURE-PROOF WHEEL.

The wheel shown here practically accomplishes the feat of being puncture and blow-out proof by its unusual construction. At the tread is a tire of solid rubber vulcanized to a steel rim. Beneath this rim are engaged two pneumatic tires between which a shock absorber is positioned. This shock absorber comes into use only in case of an overload to the vehicle or excessive wheel shock. (The Eagle Puncture-Proof Tire & Wheel Co., Inc., 17 West 42nd street, New York City.)

WHEEL WITH PNEUMATIC HUB.

Another solution of the tire-puncture question is developed in a wheel illustrated herewith. This wheel has a solid rubber tire at the tread, while the pneumatic cushion is located around the hub. A covering plate which can be easily removed gives access to the inflating valve and it is claimed that inflation twice a month is sufficient. The steel wheel may be equipped with any standard solid single, or dual tire equipment, the pneumatic hub providing the desired resiliency. (The Houston Pneumatic Puncture-Proof Wheel Co., Houston, Texas.)

"Houston" Wheel.

Foreign Import Duties on Boots and Shoes.

THE following table, corrected to February 1, 1919, by the Bureau of Foreign and Domestic Commerce, shows the foreign import duties on rubber boots and shoes of all descriptions, imported into the various countries from the United States.

Owing to the frequency of tariff changes the figures and information given in this table should be periodically verified. It is also advised that small trial shipments be made in order to test the rates prior to sending more extensive shipments.

In the first column is given the country, while the next column contains the articles, with notes regarding surtaxes, basis of rates, etc. The third column specifies whether the weight is to be taken as gross or net and the last gives the ad valorem duty or the rate of specific duty in United States currency.

Due to the restrictions upon importations of rubber manufacturers in France, Italy, the United Kingdom and certain other European countries, it is necessary for the foreign importer to secure a license before making shipments to those countries.

COUNTRIES.	ARTICLES AND REMARKS.	Weight.	Duty (U. S. Currency).
EUROPE:			
Austria-Hungary	Shoemakers' wares, with textile goods, per 100 pounds	Net	$11.05
Belgium	Manufactures of india rubber, ad valorem	...	10%
Bulgaria	Ordinary rubber boots and shoes (galoshes), per 100 pounds (includes 20 per cent surtax)	Net	$10.51
	Other rubber boots and shoes, per 100 pounds (includes 20 per cent surtax)	Net	21.01
Denmark	Rubber boots and shoes, with textiles, per 100 pounds—including inner packing	Legal	6.03
France	Rubber footwear lined with felt, wool, or any partly woolen cloth, per 100 pounds	Net	13.13
	Rubber footwear lined with cotton, hemp, or flax cloth, per 100 pounds	Net	10.51
	Footwear with soles of rubber, per pair	...	0.14
Germany	Footwear, with or without rubber soles—Unvarnished, per 100 pounds	Net	7.56
	Varnished, per 100 pounds	Net	8.64
Great Britain	Manufactures of rubber	...	Free
Greece	Galoshes of rubber, per 100 pounds	Net	$30.78
Italy	Rubber footwear, lined or trimmed with fabrics, per 100 pairs	...	38.60
	Other rubber footwear, per 100 pounds	Net	4.38
Netherlands	Rubber footwear, ad valorem	...	5%
Norway	Rubber footwear, per 100 pounds	Net	$1.16
Portugal	Rubber footwear (including luxury tax of $0.34 per pair), per pair	...	0.91
Roumania	Rubber footwear, per 100 pounds	Legal	10.51
Russia	Rubber footwear, per 100 pounds	Net	26.35
Servia	Rubber footwear, per 100 pounds	Net	12.26
Spain	Rubber footwear, per 100 pounds	Net	26.26
Sweden	Rubber footwear, per 100 pounds	Net	14.59
Switzerland	Rubber footwear, per 100 pounds	Gross	2.63
Turkey	Rubber galoshes, boots and shoes	Net	10.50
NORTH AMERICA:			
Canada	Rubber boots and shoes, ad valorem, including war tax (7½ per cent)	...	32½%
	Imports of articles invoiced at prices less than the market value in the country from which exported, are liable to a "dumping" duty if such articles are also made in Canada.		
Newfoundland	Footwear and all manufactures in part or in whole of india rubber or gutta percha, ad valorem, including 10 per cent surtax	...	44%
CENTRAL AMERICA:			
Costa Rica	Rubber footwear, per 100 pounds	Gross	$21.09
Guatemala	Boots and shoes, and overshoes of rubber or rubberized cloth, per 100 pounds	Legal	46.49
Honduras	Rubber boots, per 100 pounds	Gross	65.44
	Footwear of rubberized cloth, per 100 pounds	Gross	21.81
Mexico	Footwear of rubber or cloth and rubber, not including variable paper surtax, per 100 pounds	Legal	22.59
Nicaragua	Rubber footwear (including surtax of 12½ per cent of the duty), per 100 pounds	Net	25.52
Panama	Rubber footwear, ad valorem	...	15%
Salvador	Rubber footwear, per 100 pounds	Gross	$46.14
WEST INDIES:			
Cuba	Rubber footwear with cotton fabrics, per 100 pounds	Legal	11.82
Santo Domingo	Rubber footwear	Net	11.35
St. Vincent	Manufactures of rubber, ad valorem	...	17.2%
Virgin Islands	Imports from the United States	...	Free
SOUTH AMERICA:			
Argentina	Rubber footwear—includes surtax of 7 per cent—duty based on valuation of $54.72 per 100 pounds.	...	47%
	Footwear of cloth and rubber, whole sole measures 25 centimeters (9.84 inches) or less, duty based on valuation of $2.90 per dozen, includes surtax of 7 per cent of valuation	...	47%
	Same footwear, larger sizes, duty based on valuation of $6.76 per dozen, includes surtax of 7 per cent	...	47%
Bolivia	Rubber footwear for men, surtax of 15 per cent is included, based on valuation of $14.00 per dozen pairs	...	$1.75%
	Rubber footwear for women and children: Overshoes, rubbers, boots, lined or not, including surtax of 15 per cent, based on valuation of $0.56 per pound, legal	...	46%
	Footwear for women and children with exterior lining, with or without interior lining, including surtax of 15 per cent, based on valuation of $0.88 per pound, legal	...	46%
Brazil	Rubber footwear—nominally 3 milreis per kilo—per 100 pounds	Legal	$61.01
	(Footwear made of Pará rubber, 5 per cent of the rate shown.)		
Chile	Rubber footwear of all kinds, per 100 pounds	Net	33.11
Colombia	Rubber footwear, including surtax of 7 per cent of duty, per 100 pounds	Gross	48.53
Ecuador	Rubber footwear, per 100 pounds	Net	30.02
Paraguay	Rubber footwear, with sole measuring 25 centimeters or less, includes surtax of 1½ per cent of valuation, based on valuation of $5.79 per dozen pairs	...	63.5%
	Rubber footwear of larger sizes, based on valuation of $11.58 per dozen pairs	...	63.5%
Peru	Rubber footwear, including weight of inner packing; at ports of Callao, Salavery, Paita and Pisco, surtax of 10 per cent, per 100 pounds	Legal	$32.76
	At other ports—surtax of 8 per cent, per 100 pounds	Legal	32.18
Uruguay	Rubber footwear, based on valuation of $5.17 per dozen pairs—surtax of 14 per cent of valuation included	...	62%
Venezuela	Rubber footwear, including surtax of 56.55 per cent, per 100 pounds	Gross	$34.26

ASIA:			
Ceylon	Rubber footwear, ad valorem	...	7.5%
China	Rubber boots, per dozen pairs	...	$0.73
	Rubber shoes, per dozen pairs	...	0.18
Japan	Rubber boots, per 100 pounds	Net	18.82
	Rubber shoes, per 100 pounds	Net	21.79
	Rubber overshoes, per 100 pounds	Net	19.43
OCEANIA:			
Australia	Galoshes, rubber sand boots and shoes, and plimsolls, ad valorem	...	30%
	Rubber gum and wading boots, ad valorem	...	10%
New Zealand	Rubber footwear, ad valorem	...	34¼%
AFRICA:			
South Africa	Rubber footwear, ad valorem	...	20%
With a minimum per pair of—			
	Men's	...	$0.18
	Women's	...	0.12
	Children's	...	0.06

Legal weight is not uniformly construed, but generally includes the weight of the immediate packing or container, though in some countries fixed tare allowances are made. In Argentina, Bolivia, Paraguay, and Uruguay, the duties are to be computed upon the official valuations at the rates given in the last column.

Foreign Import Duties on Rubber Tires.

THE following table, corrected to February 1, 1919, by the Bureau of Foreign and Domestic Commerce shows the foreign import duties on rubber tires of all descriptions imported into the various countries from the United States.

The column marked "Weight" shows whether duties are levied on net or gross weight, or include simply the inner packings. The next two columns give the rate of the duty for each one hundred pounds in United States currency or the rate per cent ad valorem.

In the following monograph the surtaxes have been included and the converted rates therefore indicate the actual duty payable.

Certain charges such as warehousing, customs handling, local taxes, revenue stamps, etc., are not included. The rates of duty shown, including the surtaxes as noted, should therefore be regarded as the minima. As changes in duties are likely to occur at any time, frequent verifications of these figures is advised.

Due to the restrictions upon importations of rubber manufactures in France, Italy, and the United Kingdom, it is necessary for the foreign importer to secure a license before making shipments to those countries. The same is true of the neutral countries of Europe other than Spain.

COUNTRIES.	Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.
Canada	....	....	42.5
(Ad valorem duties are based on the fair market value of the articles when sold for home consumption in the country whence exported direct to Canada.)			
Central American States—			
British Honduras	....	....	15
(Duties based on price in the port of export.)			
Costa Rica	Gross	$4.22	....
(In addition, there is a wharfage tax of 10.5 cents per 100 pounds.)			
Gautemala	Gross	7.21	....
(A new tariff was adopted in 1917, but the enforcement has been indefinitely postponed.)			
Honduras	Gross	4.28	....
Nicaragua	Net	30.62	....
(A surtax of 12½ per cent of the duties is included.)			
Panama	....	....	15
Salvador	Gross	13.81	....
(A surtax of 12½ per cent of the duty is included.)			
Hawaii	....	....	Free
(Imports from foreign countries are subject to the provisions of the United States tariff.)			
Mexico—Auto and motorcycle tires	Gross	16.94	....
Bicycle tires	Legal	45.18	....
(Not including variable paper surtax.)			
Newfoundland	....	....	49.5
(A surtax of 10 per cent of the duty is included.)			
West Indies—			
British—			
*Antigua	....	....	13.33
†Bahamas	....	....	22
*Barbados	....	....	11.25
*Dominica	....	....	12.5
*Grenada	....	....	10
Jamaica	....	....	16.66
(Tires for motor vehicles are subject to a surtax of 20 per cent of the duty, which is to be added.)			
*Montserrat	....	....	13.33
*St. Christopher-Nevis	....	....	11
*St. Lucia	....	....	16.5
*St. Vincent	....	....	17.2
*Trinidad and Tobago	....	....	10
Turks and Caicos Islands	....	....	10
Virgin Islands	....	....	10
Cuba	....	....	25
Dominican Republic	Net	36.29	....
Dutch Colonies	....	....	3

COUNTRIES.	Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.
French—			
Guadeloupe	....	....	6
Martinique (rate not specified)	....	....	....
(Imports of other than French origin pay also the regular French import duties.)			
Haiti	....	....	22.24
Porto Rico	....	....	Free
(Imports from foreign countries are subject to the provisions of the United States tariff.)			
Virgin Islands of the United States	....	....	Free
(Imports from foreign countries are temporarily subject to the duties formerly in force in the Danish West Indies.)			
SOUTH AMERICA:			
Argentina—Auto and solid tires	Legal	$10.51	....
Bolivia	Gross	20.29	....
‡Brazil—Auto tires of Pará rubber	....	....	12.51
Other auto tires	....	....	28.89
Motor truck tires	....	....	12.51
Chile	Gross	9.93	....
Columbia	Gross	0.97	....
Ecuador	Legal	9.93	....
Guiana—British	....	....	16.5
(When imported from the United Kingdom, Canada or Newfoundland, admitted at a reduction of one-fifth of the duty.)			
Dutch	....	....	10
French	....	....	5
(The regular French import duties are also collected on goods not of French origin.)			
Paraguay—Auto tires	Legal	38.08	....
Bicycle and motorcycle tires	Legal	47.60	....
Peru—Auto tires	Gross	24.25	....
Other tires	Legal	36.42	....
Uruguay	....	....	45
Venezuela	Gross	10.28	....
EUROPE:			
Austria-Hungry	Net	13.81	....
Belgium—Solid tires	Net	5.69	....
Auto tires (Casings only.)	Net	10.16	....
Inner tubes	Net	14.88	....
Bulgaria—Tires and tubes	Net	5.25	....
Denmark—Auto tires	Net	6.08	....
Solid tires	....	....	Free
Faroe Islands	....	....	Free
Finland—Auto tires	Net	9.55	....
Inner tubes	Net	5.30	....
France—Auto tires and tubes	Net	13.13	....
Solid tires	Net	8.75	....
Cycle tires	Net	21.89	....
Germany—Auto tires	Net	6.48	....
Inner tubes	Net	6.48	....
Gibraltar	....	....	Free
Greece	Net	1.03	....
Iceland	Net	0.24	....
Italy—Auto tires and tubes	Net	5.25	....
Malta	....	....	5
Netherlands	....	....	5
Norway—Auto tires	Net	3.65	....
Motorcycle tires	Net	3.65	....

* When imported from the United Kingdom, Canada or Newfoundland, admitted at a reduction of one-fifth of the duty. The cost of packing is excluded, except in Dominica, St. Lucia and Grenada, where it is included.

† A surtax of 10 per cent is included.

‡ The provisions of the Brazilian Budget Law for 1918, relative to rubber tires and other rubber goods, are continued, including a provision for the refund of 95 per cent of the import duties on rubber goods in general, if made of fine Pará rubber, and the tests and markings to be applied are specified.

Countries.	Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.
Portugal	Net	$2.59	.....
(Conversion to U. S. currency based on the latest quotation of the paper milreis.)			
Roumania—Auto tires	Legal	9.06	.....
Solid tires	Legal	4.90	.....
Russia—Cycle tires	Net	18.82	.....
Auto tires	Net	32.09	.....
Servia	Net	10.51	.....
Spain—Solid tires	Net	17.51	.....
Casings and inner tubes	Net	23.64	.....
Sweden—Auto tires	Net	14.59	.....
Solid tires	Net	9.73	.....
Switzerland—Auto tires	Gross	0.44	.....
Solid tires	Gross	0.09	.....
Turkey	....	15.00	.....
United Kingdom	....	.....	Free
Asia:			
British—			
Aden	....	.....	Free
Ceylon	....	.....	7.5
(Duty based on wholesale cash price in bond, less trade discount at the port of entry.)			
Cyprus	....	.....	10
(Duty based on export price with addition of cost of transport [including insurance] to the port of final discharge.)			
Federated Malay States	....	.....	10
Hongkong	....	.....	Free
India	....	.....	7.5
(See note for Ceylon.)			
North Borneo	....	.....	10
Sarawak	....	.....	Free
Straits Settlements	....	.....	Free
China	....	.....	5
Chosen (Korea)	....	.....	8
Dutch East Indies	....	.....	10
French Indo-China	....	.....	.....
(Imports from France are admitted free of duty, while imports from other countries are subject to the rates prescribed by the customs tariff of France.)			
Japan (including Formosa)—Auto tires	....	.....	25
Cycle tires	Net	$42.92	.....
Mesopotamia	....	.....	10
Persia	....	.....	10
Siam	....	.....	3
Africa:			
Abyssinia	....	.....	10
British—			
Mauritius	....	.....	12
Nigeria	....	.....	Free
Union of South Africa	....	.....	20
(Duty based on the current value of home consumption at the place of purchase, including value of packing and agent's commission if it exceeds 5 per cent.)			
Zanzibar	....	.....	7.5
(The dutiable value of imports from Europe or America is taken to be the cost price [with charges], increased by 5 per cent or the invoice price [exclusive of charges], increased by 15 per cent.)			
Congo	....	.....	10
Egypt	....	.....	8
(In Alexandria a wharfage tax of one-half of 1 per cent is added.)			
French Algeria	....	.....	.....
(Imports from France are admitted free of duty, while the imports from other countries are subject to the rates prescribed by the customs tariff of France.)			
Italian—			
Eritrea	....	.....	8
Libia	....	.....	11
Somaliland	....	.....	15
Liberia	....	.....	12.5
Morocco	....	.....	12.5
Oceania:			
British—			
Australia	....	.....	35
(Duty based on fair market value F. O. B. at port of export, plus 10 per cent. On casings weighing over 2½ pounds and inner tubes over 1 pound each, 48.6 cents per pound, if higher than the ad valorem rate.)			
New Zealand	....	.....	1
Guam	....	.....	Free
(Imports of foreign origin are taexd 25 per cent of their value.)			
Philippine Islands	....	.....	Free
(Imports of foreign origin are taxed 25 per cent of their value.)			
Tutuila	....	.....	10

Legal weight is not uniformly construed but generally includes the weight of the immediate packing or container, though in some countries fixed tare allowances are made.

PNEUMATIC TIRES AND THEIR CARE.

WILL car owners continue to practice the economy methods adopted during the war? This is the big question to-day.

With tire manufacturers gradually resuming pre-war production and as the supply of tires reaches normal, will owners soon forget war's tire lesson and return to the old way of negligence and waste?

Statistics compiled by The B. F. Goodrich Rubber Co. disclose a tremendous increase in the sale of tire repair material and accessories during 1918. Tire sleeves, blow-out patches and plastic for plugging holes were used on a far greater scale than ever before in the history of motoring. Car owners took the tire-care problem seriously. They were surprised themselves at the saving realized, and the added mileage they got from their tires. They saw the folly of their previous extravagance.

The accompanying illustrations show some of the most commonly neglected injuries to pneumatic tires.

INJURED BY CHAINS.

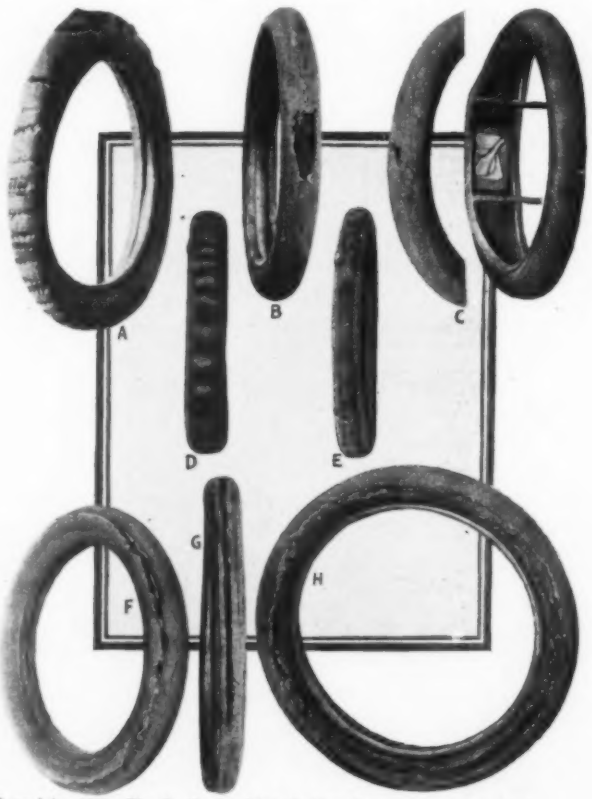
A.—The result of improper application of tire chains. Leave chains just loose enough so that every time the wheel turns the cross chains will not strike the same spot in the tire.

SKIDDING.

B.—The effect of skidding, caused by a sudden application of the brakes. Part of the face of this tire has been scraped off.

BLOW-OUTS.

C.—The result of neglect. First, the tire was cut entirely through by some sharp object. An inside temporary patch was applied but a permanent repair postponed too long. The temporary patch gradually pulled away from its original position and was forced through the break. Whenever inside patches are used, an outside emergency band should also be applied, and both



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Typical Injuries to Pneumatic Tires.

removed and a permanent repair made as quickly as possible while the injury is small.

UNDERINFLATION.

D.—The damage done by underinflation. The wavy condition of the tread of this tire is due to its having been run soft, with insufficient air, with consequent loosening from the fabric through no fault of manufacture. Most tire manufacturers have inflation schedules which they are very anxious to place in the hands of every tire user.

NEGLECTED CUTS.

E.—A casing with two-thirds of its life wasted. Neglected cuts in the tough rubber tread always cause it to blister. Sand

and dirt are forced into the cuts and work around under the tread. Note several large "bumps" where these have accumulated. If a tire is carefully watched for these cuts, a little plastic will heal them quickly and no damage will result.

RUNNING IN CAR TRACKS.

Tire F has given less than 2,000 miles service, but it has been run in car tracks and the rubber is worn down to the fabric in a line following the circumference of the tire. Furthermore, the fabric has become worn and blistered. The casing is beyond repair.

FAULTY ALINEMENT.

A more common tire injury is shown in illustration G. This effect is due to faulty alinement of the front wheels. A bent axle or steering knuckle may be responsible or possibly the demountable rim was not perfectly applied.

Accidents are not always responsible for the front wheels being out of alinement but frequently this is the case. All cars, through no fault in manufacture, are subject to this condition, and the first indication will be given when the tread of one or both tires wears as though a rough file had been used on them. If the tread becomes worn through, and the fabric affected, the tire is beyond repair. Test your front wheels frequently and be sure that they are in proper alinement.

RUT WORN.

H.—A tire that has been run in ruts. This wear on the sidewalls occurs regardless of whether the ruts in the road are too large or too small for the tire. What's the answer? Keep out of the ruts. Tires were not made to withstand wear of this kind.

THE EDITOR'S BOOK TABLE.

THE PAN AMERICAN REVIEW. PUBLISHED MONTHLY BY THE Pan American Society of the United States, Inc., 15 Broad street, New York City. Price to non-members $2 per annum; single copies, 20 cents.

THE first issue of this little publication contains fifteen pages. It is published by a group of prominent men who desire to help in developing and conserving mutual knowledge, understanding and friendship among the American republics and peoples.

ACCOUNTING AS AN AID TO BUSINESS PROFITS. BY WILLIAM R. Bassett. A. W. Shaw Co., Chicago, Illinois. (Cloth, octavo, 320 pages. Price, $5.30 postpaid.)

Not a treatise on accounting in the ordinary sense, this work is rather an explanation of accounting for the every-day business man who wants to know best how to manage his business and demands that his bookkeeping be a real living history rather than a mere collection of figures. The assumption throughout is that the only accounting worth while is that which combines an exact book record of transactions with an exact book record of operations, so that causes as well as effects may be analyzed. Many tested plans, labor-saving methods, and 114 forms that have been successfully used by concerns throughout the country amplify the text, their object being less waste, dependable costs, faster turnover, savings in labor and lower selling expense. The chapters on statements of condition and operation, the value of good-will, depreciation, purchasing, costs of materials and labor, determining overhead and selling expenses, and control reports for the executive, are especially valuable to every progressive business man.

THE EDITOR IS THE PROUD RECIPIENT OF A COPY OF "Government War Advertising," the report of the Division of Advertising, Committee on Public Information, inscribed to THE INDIA RUBBER WORLD, "whose patriotic contribution of space or services has helped to win the war through advertising." The report is a handsome 48-page quarto publication on dull finish paper with light-brown paper covers. It sets forth in detail the work of the Division of Advertising, describes the several advertising campaigns that helped to win the war, and lists the contributions of space and services. In these lists the rubber and allied industries are represented by the following firms: Converse Rubber Shoe Co.; Cutler-Hammer Manufacturing Co.; E. I. du Pont de Nemours & Co.; Firestone Tire & Rubber Co.; General Electric Co.; Goodyear Tire & Rubber Co.; McGraw Tire & Rubber Co.; Star Rubber Co.; Taylor Instrument Cos.; L. E. Waterman Co.; Westinghouse Electric & Manufacturing Co.;

NEW TRADE PUBLICATIONS.

"WARP AND WEFT" IS THE NAME OF AN 8-PAGE ILLUSTRATED newspaper published "every little while" by the employes of the Brighton Mills, Passaic and Allwood, New Jersey. It is a breezy paper of general articles, news and personal mention of particular interest to Brighton operatives.

* * *

THE MORSE CHAIN CO., ITHACA, NEW YORK, IS DISTRIBUTING Publication No. 16 of the "Chain of Evidence" series devoted to small-power drives. It is a handsome 24-page pamphlet with many illustrations showing the application of Morse silent chains to a great variety of machinery.

* * *

THE SCHAEFFER & BUDENBERG MANUFACTURING CO., BROOKLYN, New York, has issued a large and handsome catalog of Columbia recording thermometers now extensively used in connection with rubber vulcanizers. Many illustrations and data render intelligent selection of the proper instrument an easy matter.

* * *

THE RUBBER COMPOUND BUREAU, AKRON, OHIO, is distributing among rubber manufacturers of the United States and foreign countries a folder enabling the rubber chemist and superintendent to select any formula that he may need to improve his present line of manufacture.

* * *

"WHERE TO BUY NEOLIN SOLED SHOES FOR THEM ALL," IS THE title of a booklet recently issued by The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ontario. Other booklets from the same company of interest to the trade include: "Neolin—A Handbook of Information for Retailers and Their Salespeople," and "For Comfort and Hard Wear." These booklets contain a brief account of the inception of Neolin, testimonials from shoe manufacturers' lists of manufacturers who use these soles on their product, lists of styles, etc. They are printed on good stock with poster covers in colors.

THE OBITUARY RECORD.

INVENTED THE RUBBER STEP FOR VEHICLES.

GEORGE A. KEENE, inventor of the rubber step, or tread for vehicles and many other useful articles, died at the residence of his son in Rockford, Illinois, March 7, 1919, aged 87 years. He was a life-long resident of Lynn, Massachusetts. He is survived by his widow, one son and four daughters, besides ten grandchildren and seven great-grandchildren.

DAUGHTER OF A NOTED RUBBER MAN.

Miss G. Lillian Clapp, who died at her home in Boston, March 15, 1919, was the daughter of the late Charles M. Clapp, one of the pioneers of the rubber industry, who, with R. D. Evans, was proprietor of the old Aetna Rubber Mills in Boston in the 'sixties and 'seventies of the last century. Miss Clapp, who was born in 1858, was a public-spirited woman who devoted herself whole-heartedly to philanthropic work, being especially active as a member of the board of managers of the Bethesda Society, and holding similar offices with the Norfolk House Centre, Little Wanderers' Home and Homeopathic Hospital, and during the late war was prominent in Red Cross work. She is survived by her sister, Mrs. N. Hugh Cotton, who was Miss Harriet E. Clapp.

Interesting Letters From Our Readers.

FIRST-HAND NEWS OF BELGIAN RUBBER MILLS.

PROBABLY no man in the world is better known to the rubber trade than Captain Ernest B. Buckleton. His genial optimism and friendly tolerance have not been in the least dimmed by financial sacrifice, by months on the Western Front, by trench fever or by shell shock. Since the signing of the armistice, Captain Buckleton is able to resume business, and is visiting old friends among the European rubber manufacturers. A personal letter from him to the Editor is of such general interest that we take the liberty of letting his many friends read it also.

To the Editor of The India Rubber World.

DEAR SIR:—I am now in Italy for a few days after a most interesting trip through Belgium and northern France. I visited Liege first and had the pleasure after four and a half years of meeting Mr. Englebert, the head of the firm of Englebert & Co., and he gave me an account of the invasion of the Germans in 1914. He had the pleasure (?) of a visit from two of the leading German rubber manufacturers who took an inventory of his stock and machinery, the former of which was entirely commandeered by the Germans and part of the latter dismantled and sent back to Germany. These two gentlemen, both well known to us, told Englebert the German army would be in Paris in three weeks, and when Paris was taken would go to Russia and clean them up. This was the first time that I had heard at first hand of their intentions. Englebert is one of the greatest Belgian patriots and would not work for the Germans, so they took his plant and turned it into a barracks, where they quartered over 2,000 troops during the whole of the war and it was there that the first red flag of the German revolution was hoisted. Englebert, on account of his loyalty, had a most uncomfortable time during the whole of the war. Fortunately, however, for him, he was Consul for Spain, which saved his scalp.

Oscar Englebert.

They left his works in very bad shape, stripped of all raw materials, and it will take several months to replace all the brass parts of his machinery, which they took. In this part of Belgium and Brussels, all the door knobs, knockers and brass plates have all been removed and in a great many places replaced with wooden ones.

During the German occupation the destruction was very severe and life must have been almost intolerable. You could be out at night only until a certain time; after that a permit was necessary, and if by any chance you overstayed your time five minutes, you were arrested. What a time these people had!

The price of food in Belgium has been and is very high. Butter has been $5 a pound, is now $2.50; eggs, 50 cents, now 20 cents each; meat, $3, now nearly $2 a pound; potatoes, 60 cents a pound; boots, now from $25 to $30 a pair; soap, 75 cents a small cake.

After leaving Brussels I went through the war zone of northern France, which was a good rubber centre. Michel-Jackson's plants at Menin and Halluin were in direct line of fire and nothing remains but the bare walls, two other small factories are nothing but ruins, and from there to Lille three other plants are wrecks. You can picture what this zone looks like if you could picture Trenton after a fire which swept the place from one end to the other, leaving nothing but the bare walls standing I cannot see that this part of France can be rebuilt in this generation. It took me 10 hours from Brussels to Lille and 14 hours from Lille to Paris, usually a five-hour trip, and the journey is most uncomfortable. Most of the trains have no windows, no heat and people packed like sardines. I had to stand up for eight hours of my trip from Lille to Paris.

After staying in Paris for a week, I came to Milan and have had a good talk with young Dr. Pirelli, who has just got out of the army. He tells me that economic conditions in Italy are very bad. Very few people know how much Italy has done and how much she has suffered. She has had 480,000 killed and spent more than three-quarters of her wealth. How the country can be reconstructed is a grave problem. It certainly looks as if America is going to have her hands full for a generation in helping to reconstruct Europe, and the American business man will be asked to make many sacrifices as his part in this world's war.

Restrictions must necessarily be placed on imports to all countries in Europe that have taken an active part in the war, and a good many American manufacturers will chafe under them. I am confident they will keep up the good work and continue the good example shown in their wonderful response to the call for charities. I think it will take several years for France, England, Italy and Belgium to reconstruct, and during this period America will help as her part in the three years when she stayed out of the war, which I think you will all admit was as much hers as ours in Europe.

The Michel-Jackson Factory Before the War.

Yours sincerely,

Ernest B. Buckleton.

Milan, Italy.

FROM A WELL-KNOWN FRENCHMAN.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

Dear Sir.—I send you enclosed a short note on rubber factories in the occupied territories, which have been destroyed by the Boches.

Among them were two particularly important factories, that of Englebert at Liege, which employed 3,000 to 4,000 workers, and that of Wolber at Soissons, which had as numerous a staff. Nothing remains and all the stolen equipment has been methodically transported to Germany. The damage done to the rubber industry in the invaded territories amounts to about forty millions of francs. To that must be added the formidable stocks of crude rubber which were at Antwerp, especially those consigned to Messrs. Osterrieth & de Bude of a value of fifty or sixty millions, and which were simply stolen by the Boches.

Many factories using rubber and others making products used in rubber factories were situated in the territories occupied by the Germans. Of all these establishments nothing remains; the equipment has been sent to Germany. The generators, the steam engines, the electric motors, the transmissions, have also disappeared, stolen or destroyed. In many places the buildings themselves have been destroyed, either by bombardment or by fire.

The factory of Le Frant & Co., which was at Ham (Somme), one of the greatest manufacturers of substitutes, has disappeared.

The factory of Lufbery and Chardonnier at Chauny (Aisne), has also disappeared.

The rubber factory of Boinet, formerly Lefebure, at St. Quentin, has been leveled to the ground.

The same is the case with the factories of electric cables of Jeumont (Nord), the Destriez factory at Pont à Marcq (Nord), the Henry factory at Soissons (Aisne), the factory of the Colonial Rubber Co., at Uriant and at Gand (Belgium), the Jackson factories at Halluin and at Menin (Belgium), and the two groups of Wolber factories at Soissons. About a dozen important factories disappeared during the war.

Yours sincerely,

ANDRÉ DUBOSC.

Bapaume-les-Rouen.

JUDICIAL DECISIONS.

NATIONAL METAL MO DING CO. *v.* TUBULAR WOVEN FABRIC CO.—Circuit Court of Appeals, First Circuit, November 14, 1917.

A decision declaring the Osborn patent No. 652,806 for flexible electric conduit valid and infringed by the Tubular people's product was given in November, 1915, and the latter were enjoined from making their product. They changed it to eliminate the infringing feature.

Contempt proceedings were started by the National people when they started to make their modified article. The Court refused to hold them in contempt on the ground that the new article raised a new question of infringement. A supplemental bill of infringement was presented and the modified structure was held not to infringe the Osborn patent No. 652.806 for flexible electrical conduit. (Federal Reporter, Volume 254, page 304.)

DOWSE *v.* FEDERAL RUBBER COMPANY ET AL.—District Court, N. D., Illinois, E. D., December 7, 1918.

Byron C. Dowse, while employed by the Federal Rubber Co., being one of the largest stockholders and virtually in charge of the entire works of the company, invented a method of reinforcing automobile tires, known as the "double cable base." After applying for the patent, but before it was issued to him, Dowse sold his stock and severed his connection with the company. Suit was brought to test the validity of the patent and to ascertain the ownership of the patent.

If Dowse had been employed by the manufacturing company taking orders from another officer of the company, then the patent would have been his personal property, and the company would only have an implied shop right to the invention. However, he being an officer the patent belongs to the company. It was also adjudged valid. (Federal Reporter, Volume 254, page 308.)

HOOD RUBBER CO. *vs.* NEEDHAM TIRE CO.—Court of Appeals of the District of Columbia. Decided December 2, 1918. Patent appeals Nos. 1,180 and 1,181.

In trade-mark cancellation proceedings where each party sought the cancellation of the other's mark, a trade-mark consisting of the word "Needham," with the barb and feather of an arrow projecting beyond the end of the word, was held to conflict with a mark consisting of the picture of an arrow, the arrow being an essential and prominent part of the first trade-mark which had been in longer use.

The Examiner of Interferences dismissed the Needham company's petition for cancellation and sustained that of the Hood company, but on appeal an assistant commissioner cancelled the registration of the Hood company, ruling that because the arrow is one of the widest known and most useful functional signs, it could not be registered as a trade-mark.

After consideration of the evidence it was held that the appellant used the arrow-mark as a trade-mark and not as a functional sign, and that its use of this mark could in no way abridge the right of the general public to use the represenation of an arrow as a functional sign. It was further contended that other persons have used the word "Arrow" or the picture of an arrow as a trade-mark in a similar manner, but the appellee was not allowed to raise that question.

The registration of the Needham Tire Co. was cancelled and that of the Hood Rubber Co. sustained on reversal.

FRASCHE SULPHUR LIQUEFACTION PATENTS INVALID.

The United States Circuit Court, sitting at Philadelphia, Pennsylvania, has just rendered a decision reversing that of the lower tribunal, decreeing that the so-called Frasche patents covering methods and processes of mining sulphur are not of basic patentability and that no control of certain mining methods is given by them. Sulphur deposits are, therefore, opened up and the studies and experiences which Frasche made and had are now open to the world. This decision debars the holders of the Frasche patents from otherwise exercising a monopoly for 31 years of underground sulphur liquefaction by the heat process.

This decision is of special interest, since the rubber industry of the United States is estimated to consume annually about 15,000 tons of sulphur.

A complete illustrated account of this Frasche method of sulphur mining will be found in THE INDIA RUBBER WORLD August 1, 1914, pages 597-599.

TRIED TO SELL REMADE TIRES AS NEW.

Early in February the Federal Trade Commission issued formal complaints against E. P. Jones and S. A. Paul and four concerns alleged to be operated by them in New York City, The Mercury Tire Co., Inc., New York City, the Akron Tire Co., Inc., Long Island City, New York, and William H. and George Batcheller, "dominant factors" in the Long Island City concern, charging attempts to "deceive and mislead the public" in selling remade old automobile tires under new names and brands as new tires.

The concerns, the Commission says it has reason to believe, purchased old and discarded automobile tires in various parts of the United States, cause them to be repaired and coated with a thin coating of rubber or composition of similar appearance, thus removing or concealing the name or brand of the original makers, and restamp them with new names or brands with the

purpose of misleading and deceiving purchasers into believing the tires are new tires.

The Commission points out that "it is the common belief and impression among dealers and consumers and the purchasing public generally, that automobile tires having the appearance and sold as new tires, are manufactured from new and unused material." The concerns, it is further charged, have "at all times" concealed and wholly failed to disclose that their tires are remade; and have circulated advertising to the effect that their tires are new and not made over.

In addition, the complaints charge false representations in advertising to the effect that the tires were guaranteed to run 4,000 miles, when "they well knew that said tires have been worn and discarded before being coated with the thin film of rubber or composition."

E. P. Jones and S. A. Paul were cited to appear before the Commission in Washington, March 11; the Mercury concern was cited to appear April 3, and the Akron company April 4.

GOODYEAR SALES METHODS LEGAL.

The methods of The Goodyear Tire & Rubber Co., Akron, Ohio, in doing business with its dealers and in refusing to sell to those who will not maintain its resale prices, is legal, according to a recent decision by Judge Augustus N. Hand, of the United States Court for the Southern District of New York, in which he sustained the demurrer filed by the Goodyear company in the suit filed against it by H. P. Baran, a Goodyear dealer, claiming infringement of the Sherman and Clayton laws.

The allegations of the plaintiff were substantially the same as the complaint of the Federal Trade Commission, as published on page 731 of THE INDIA RUBBER WORLD of September 1, 1918.

The Goodyear Company contended that its object was to protect the public and insure maximum service from Goodyear products.

Judge Hand ruled that no decision of an Appellate Court "prevents a single trader from rejecting a customer because he does not like the prices at which the customer resold, or otherwise disapproved of his mode of conduct," and found nothing to show "how the alleged discrimination might substantially lessen competition" or "tend to create a monopoly."

This decision upholding the principle of price-fixing is particularly interesting for its far-reaching effect on the manner of distributing manufactured products to the consumer.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(700.) A correspondent requests the names of manufacturers of hand-operated machines for cutting rubber valves and washers.

(701.) An inquiry has been received for the names of concerns in the East that grind hard rubber dust for the trade.

(702.) A request is made for addresses of concerns dealing in white stainless rubber cement used in the millinery trade.

(703.) A correspondent desires information concerning a process for covering inner-tube poles with aluminum.

(704.) A manufacturer requests information concerning the manufacture of tennis balls and tennis shoes.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(28,431.) A Belgian importer in England desires an agency for rubber soles.

(28,434.) An agency is desired for the sale in England and France of waterproof textiles, etc.

(28,449.) A firm in India desires to purchase and an agency for the sale of tires, tubes, and accessories.

(28,452.) A commercial agency in Honduras desires to represent sporting goods firms, f. o. b. American port. Correspondence may be in English.

(28,512.) A man in France desires an agency to sell rubber articles. Correspondence in French.

(28,518.) A man in France desires an agency and to establish a depot for the sale of asbestos, rubber, etc. Correspondence in French.

(28,564.) An Italian desires to represent American firms for the sale of rubber goods, etc.

(28,572.) A firm in India desires an agency for the sale of fountain pens.

(28,585.) A firm in Spain desires an agency for the sale of belting.

(28,601.) A man in France desires an agency for the sale of mechanical rubber goods.

(28,605.) Representative of an Australian firm, now in America, desires sole representation and to purchase rubber manufacturers' supplies.

(28,612.) A man in France desires an agency for the sale of rubber overshoes. Correspondence in French.

(28,621.) Member of a New Zealand firm desires exclusive agencies for sale of beltings, packing, etc.

(28,624.) A Norwegian concern desires agency for sale of rubber and rubber goods.

(28,636.) A man in Switzerland desires agency for sale of dress shields, suspenders, etc. Correspondence in French.

(28,642.) A man in Switzerland desires agency for sale of, or to purchase, balata belting, etc.

(28,656.) A Norwegian firm desires agency for sale of wire-insulating materials, belting, packing, etc.

(28,668.) A man in Italy desires to purchase or agency for rubber heels.

(28,680.) A Norwegian firm desires to purchase belting, asbestos and magnesia products, and rubber goods. Payment, banker's confirmed credit in New York. Correspondence may be in English.

(28,683.) A wholesale dealer in France desires to purchase and secure agency for sale of rubber and black-dyed caoutchouc for surgery, industry, etc. Correspondence in French.

(28,724.) A commercial agent in France desires agency for sale of rubber heels. Correspondence in French.

(28,727.) A commercial agent in France desires agency for sale of automobile tires and accessories.

(28,730.) A company in Australia desires to purchase rubber and composition floor-coverings, both in rolls and in art squares, f. o. b. New York. Cash against documents, less discounts. Correspondence may be in English.

(28,749.) Member of New Zealand firm desires agency from manufacturers only for sale of motor-vehicle tires.

(28,756.) A man in Belgium desires agency for sale of rubber. Correspondence may be in English.

(28,773.) Italian firm desires agency for sale of rubber goods. Correspondence may be in English.

(28,781.) Head of American firm in South Africa, now in this country, desires exclusive agency for sale of rubber goods.

(28,794.) A British Indian company, purchasing headquarters in New York, desires to buy direct from manufacturers, waterproofing materials. Payment against documents in New York.

MONTEREY HAS CHAMBER OF COMMERCE.

An American chamber of commerce has been organized at Monterey, Mexico, and desires the cooperation of similar bodies in the United States. Wilbur T. Gracey is consul in that city.

News of the American Rubber Industry.

REELECTED OFFICERS OF THE B. F. GOODRICH CO.

THE B. F. Goodrich Co., at its annual meeting held on March 12, 1919, at its New York City office, reelected for three years its six directors whose terms of office expired, as follows: L. D. Brown, W. C. Geer, C. C. Goodrich, F. H. Mason, W. A. Means, and A. H. Noah. E. C. Shaw, who has served the company in an advisory capacity for the last year, will continue a director.

B. G. Work.

At the subsequent meeting of directors, the officers of the company were also reelected, namely: B. G. Work, president; H. E. Raymond, vice-president; C. B. Raymond, W. A. Means, W. C. Geer, A. B. Jones, H. K. Raymond, and W. O. Rutherford, second vice-presidents; F. C. Van Cleef, secretary; L. D. Brown, treasurer; H. Hough, controller; J. C. Lawrence, assistant treasurer; H. C. Miller, manager tire sales.

DIVIDENDS.

The Apsley Rubber Co., Hudson, Massachusetts, manufacturer of rubber clothing and footwear, has declared its semi-annual dividend of three and one-half per cent on its common stock of record March 31, payable April 1, 1919.

The Dodge Manufacturing Co., Mishawaka, Indiana, manufacturer of transmission machinery, has declared the following dividens: quarterly, one and one-half per cent and one and three-quarters per cent, respectively, on its common and preferred stock, and extra, one per cent; due April 1 on stock of record March 28, 21 and 28, respectively.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, manufacturers of rubber chemicals and artificial leather, have declared the regular quarterly dividend of four and one-half per cent on its stock of record February 27, payable February 14, and one of one and one-half per cent on its debenture stock of record April 10, payable April 25, 1919.

The Firestone Tire & Rubber Co., Firestone Park, Akron, Ohio, manufacturer of tires, rubber footwear and other kinds of rubber goods, declared its quarterly dividend of $1.50 per share, payable March 20 to stock of record March 10, 1919.

The General Electric Co., Schenectady, New York, manufacturer of electrical machinery and equipment, has declared a dividend of $2 per share, payable April 15 to stock of record March 15, 1919.

The Goodyear Tire & Rubber Co., Akron, Ohio, manufacturer of tires, balloons and all kinds of rubber goods, declared its quarterly dividend of three percent, payable March 15 on stock of record March 1, 1919.

The Kelly-Springfield Tire Co., New York City, tire manufacturer, has declared its quarterly dividend of $1.50 per share on its six per cent preferred stock, payable April 1 to stock of record March 17, 1919.

The Keystone Tire & Rubber Co., New York City, tire manufacturer, has declared a stock dividend of 15 per cent on stock of record May 1, payable May 20, and the regular quarterly dividend of three per cent on its common stock of record March 21, payable April 1.

The Portage Rubber Co., Barberton, Ohio, tire manufacturer, has declared a quarterly dividend of three per cent on its common stock of record May 5, payable May 15, and one of one and three-quarters per cent on its preferred stock of record March 20, payable April 1, 1919.

The Standard Four Tire Co., tire manufacturer, Keokuk, Iowa, recently paid a cash dividend of 20 per cent on its common stock.

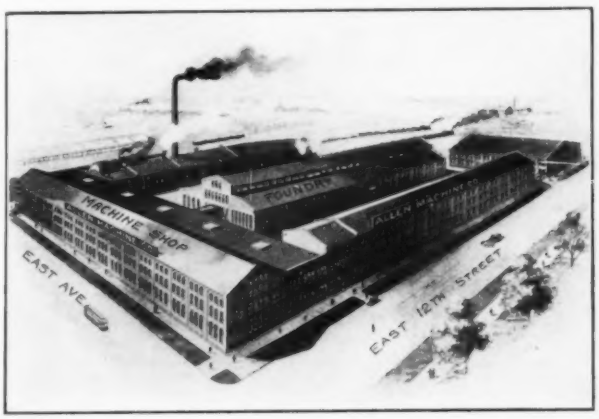
ALLEN MACHINE CO.'S NEW PLANT.

The Allen Machine Co. is now operating its new plant at Erie, Pennsylvania. It comprises a group of modern buildings specially designed and erected for engineering purposes, and includes, besides the office and engineering departments, buildings for patterns, storage, foundry and machine departments.

The foundry is 250 by 120 feet, divided into bays served by several cranes ranging from four to thirty tons in capacity. Two cupolas permit 100 tons of metal to be melted per day and individual castings up to 35 tons can be handled.

The machine department is 332 by 200 feet, with a gallery 250 by 60 feet for the lighter machine tools and assembling of small machines.

The Allen Machine Co. manufacture an extensive line of rubber mill machinery, including crackers, washers, and refiners. Mills up to 22 and 26 by 84 and calenders up to 32 by 92 are now in process of manufacture. The well-known Allen tubing



New Plant of Allen Machine Co.

machine is built in sizes inclusive of 12 inches bore, with heads adapted for straining stock, running solid truck tires, insulating, et cetera.

Other rubber working machinery produced by this company comprises vulcanizer presses, accumulators, hydraulic presses of all sizes, spreaders, fabric dryers, and a complete line for the manufacture and finishing of inner tubes.

WASTE MATERIAL DEALERS' CONVENTION.

The sixth annual meeting of the National Association of Waste Material Dealers was held at the Hotel Astor, New York City, on March 18 and 19, 1919.

The following are the newly elected officers for the ensuing year: Frederick W. Reidenbach, president; James Rosenberg, first vice-president; Henry Lessberger, second vice-president; Ivan Reitler, third vice-president; Paul H. Loewenthal, fourth vice-president; Mark B. Speer, fifth vice-president; Harry Klonick, sixth vice-president; David Feinburg, treasurer; Charles M. Haskins, secretary; directors for two years—George B. Smitheman, Julius Rosenberg, Herman Muehlstein, Herman Goldstein; other directors—Emanuel Salomon, ex-officio; Louis Birkenstein, ex-officio; Clarence White, H. H. Cummings, F. C. Overton, Daniel M. Hicks, Henry Atterbury.

The Scrap Rubber Division met under the chairmanship of David Feinberg. The present conditions in the scrap rubber market were the center of interest and it was the sense of the meeting that readjustment is in progress and will continue for some time. One of the difficulties of restoring normal market conditions on scrap rubber is the uncertainty of the course of the prices for crude rubber sorts, which directly influence the scrap situation.

NEW INCORPORATIONS.

Alden, Walker & Wilde, Inc., February 27, 1919 (Maine), $300,000. J. E. Chase, president and treasurer; P. G. Clifford, clerk—both of 95 Exchange Place, Portland, Maine. Principal office, 95 Exchange Place, Portland, Maine. To deal in rubber goods of all kinds.

American Sectional Tire Co., March 14, 1919 (Delaware), $100,000. T. L. Crotea, H. E. Knox, M. M. Clancy—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in rubber tires, tubes, rims and accessories for automobiles, etc.

American Tire Co., Inc., May 15, 1918 (Connecticut), $50,000. G. L. Giller, president, A. W. Meyers, vice-president; P. Bardeck, treasurer; L. W. Podt, secretary—all of New Britain, Connecticut; J. C. Calloghan, director, Cohoes, New York. Principal office New Britain, Connecticut. To manufacture puncture-proof tires.

American Tire & Rubber Co., The, January 24, 1919 (Oklahoma), $100,000. C. E. F. Harris, president, Poteau; E. V. Harris, director, Oklahoma City—both in Oklahoma; W. A. McMullen, vice-president, Fort Smith; I. D. Clifton, secretary and treasurer, Texarkana—both in Arkansas. Principal office, Muskogee, Oklahoma. To manufacture tires.

Arcade Tire & Supply Co., Inc., February 28, 1919 (New York), $20,000. B. and M. Grossfield, 518 West 151st street; H. Blicher, 346 Lenox avenue—all of New York City. To conduct a tire business.

Arch City Tire & Rubber Co., Inc., March 13, 1919 (New York), $5,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Armorcord Rubber Co., January 24, 1918 (West Virginia), $50,000. J. H. McDermott, E. M. Grant—both of Morgantown, West Virginia. Principal office, Morgantown, West Virginia. To manufacture tires and other automobile rubber goods.

Artillery Tire & Rubber Co., March 3, 1919 (Delaware), F. R. Hansell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Pimm—both of Camden, New Jersey. Principal office with the Corporation Guarantee and Trust Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in rubber, gutta percha, and all goods of which rubber is a component part.

Auto Tire Clearing House, Inc., January 15, 1919 (Iowa), $100,000. H. Galinsky, H. A. Meyer, I. Miller—all of Sioux City, Iowa. Principal office, Sioux City, Iowa. To buy, sell and manufacture rubber goods, tires, tubes, etc.

Birk-Boardway Tire Co., Inc., March 22, 1919 (New York), $10,000. R. H. Birk, 903 Lafayette avenue; W. H. Boardway, 33 Monticello Place; C. W. Heintz, 87 Highland avenue—all of Buffalo, New York. Principal office, Buffalo, New York. To deal in tires, etc.

Bor-Kin Tire Co., Inc., February 20, 1919 (New York), $10,000. A. Borkin, 1951 Southern Boulevard; M. Kaplow, 1804 Belmont avenue; S. Vogelson, 1421 Crotona avenue—all of Bronx, New York. To manufacture tires.

Broadway Tire Jobbers, Inc., March 6, 1919 (New Jersey), $125,000. H. S. and H. D. Eisenberg, 270, L. Kaplus, 225—all of Halsey street, Newark, New Jersey; L. M. Wehman, 26 Rich street, Irvington, New Jersey. Agent in charge, B. Larkey. To manufacture, buy, sell, and deal in tires and tubes.

Cambria Auto Tire Exchange, Inc., February 4, 1919 (Massachusetts), $25,000. N. Leitman, 38 Fifth street, Chelsea; S. Harris, M. Leitman, both of 141 Garland street, Everett—all in Massachusetts. Principal office, Boston, Massachusetts. To buy, sell, make, and repair automobile tires, tubes and accessories.

Cellular Inner-Tire Corp., The, March 5, 1919 (New York), $20,000. F. C. McKinne, Montclair; W. A. Montross, Westfield—both of New Jersey; M. C. Durkee, 952 St. Nicholas avenue, New York City. To conduct a tire business.

Charlestown Tire & Rubber Co., Inc., March 6, 1919 (New York), $6,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Chillicothe Tire & Rubber Co., January 11, 1918 (Ohio), $500,000. C. A. Hertenstein, president; S. S. Wortley, Jr., vice-president; W. W. Boulger, secretary and treasurer; H. B. Bixler; C. C. Cushman, S. Slager, J. I. Cause, directors. Principal office, Sherman Building, Paint and Water streets, Chillicothe, Ohio. To manufacture tires and tubes.

Columbus Tire and Rubber Co., The, February 1, 1919 (New York), $5,000. M. M. Kominz, 69 East Gay street, Columbus, Ohio; L. W. Lissberger, J. Jacobs, both of 1877 Broadway, New York City. Principal office, 69 East Gay street, Columbus, Ohio. To manufacture and sell tires.

Cotton States Tire & Rubber Co., Inc., March 6, 1919 (New York), $10,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires, etc.

D. & M. Cord Tire Co., The, January 14, 1919 (Ohio), $100,000. W. E. Myers, 1878 Farmington Road; W. R. Denman, 13503 Garden Road—both of East Cleveland, Ohio. Principal office, 330 Engineers Building, Cleveland, Ohio. To sell and manufacture cord tires.

Eaton Tire Service Co., The, April 23, 1918 (Ohio), $5,000. R. Focht, H. E. Dalrymple, Principal office, Eaton, Ohio. To sell automobile supplies and accessories.

Essex County Tire Co., February 25, 1919 (New Jersey), $50,000. S. Weisinger, 267 Halsey street; M. Schechter, 52 Springfield avenue; M. Schwartz, 43 Montgomery street—all of Newark, New Jersey. Principal office, 267 Halsey street, Newark, New Jersey. Agent in charge, S. Weisinger. To acquire, buy, sell, exchange, deal and trade in automobile tires and tubes.

Everwear Tire & Repair Co., Inc., March 15, 1919 (New York), $10,000. I. N. Block, 925, U. and H. A. Schaefer, 411—all of Bleecker street, Utica, New York. Principal office, Utica, New York. To do tire repairing.

Fidelity Tire & Rubber Co., February 19, 1919 (Illinois), $50,000. D. H. Dirrenberger, president; G. C. McConnell, vice-president; E. G. Stearns, treasurer; D. P. Stearns, secretary. Principal office, 175 West Jackson Boulevard, Chicago, Illinois. To deal in rubber.

Gem Tire & Rubber Co., Inc., February 20, 1919 (New York), $5,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

General Tire & Rubber Co., The, January 10, 1919 (Texas), $20,000. W. E. Fouse, Akron, Ohio; T. L. and H. R. Moore—both of Dallas, Texas. To buy and sell automobile tires, tubes and other accessories.

Goodyear Hard Rubber Co., Inc., The, January 2, 1919 (New York), $1,000. F. Achels, W. W. Weitling, E. D. Belcher—all of 11 Mercer street, New York City. To manufacture rubber goods.

Hartig Tire & Rubber Co., February 18, 1919 (Delaware), $50,000. L. Hartig, Jr., F. J. Fickling, C. A. Jones—all of 1612 Fourteenth street, N. W., Washington, D. C. Principal office with the Capital Trust Co. of Delaware, Dover, Delaware. To manufacture and trade in automobile tires, tubes, rubber goods, etc.

Headington Tire Re-Building Co. of Dallas, January 14, 1919 (Texas), $10,000. H. C. and C. G. Headington, J. C. Muse, Jr.—all of Dallas, Texas. To manufacture, buy, and sell automobiles, tires and accessories.

Horseshoe Tire Co. of New York, Inc., February 20, 1919 (New York), $100,000. F. K. Espenhain, C. P. Skinner—both of 144 West 65th street, New York City; T. H. Spence, Milwaukee, Wisconsin. Principal office, 144 West 65th street, New York City. To deal in tires.

Huguenot Tire & Rubber Co., Inc., March 11, 1919 (New York), $3,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Ideal Truck Tire Service Co., Inc., March 4, 1919 (New York), $30,000. D. Klein, 976 Simpson street; L. Plancher, 444 Grand street; H. Goldberg, 103 Norfolk street—all of New York City. To deal in tires.

India Rubber Comb Co., Inc., The, January 2, 1919 (New York), $1,000. F. Achels, W. W. Weitling, E. W. Belcher—all of 11 Mercer street, New York City. To manufacture rubber goods.

Interlocking Cord Tire & Belt Co., The, January 22, 1919 (Ohio), $150,000. A. M. High, C. E. Foust, E. E. Ammons, W. Kline, and R. M. Merritt. Principal office, Akron, Ohio. To make cord tires and cord fan belts.

Lane Brothers Auto Rim Co., The, February 24, 1919 (Indiana), $100,000. F. A., E. H., and J. M. Lane—all of Shelburn, Indiana. To manufacture and sell automobile rims and accessories.

Liberty Tire Co., Inc., January 3, 1919 (Virginia), $50,000. W. R. Hillyard, F. W. Quantz, W. L. Hollis, R. M. Swimley, C. M. Henkel—all of Winchester, Virginia. Principal office, Winchester, Virginia. To sell and manufacture tires.

Mason Cotton Fabrics Co., The, January 24, 1919 (Ohio), $3,000,000. D. M. Mason, treasurer; R. W. MacKinnon and J. H. Diehl, vice-presidents; W. A. Cluff, secretary—all of Kent, Ohio; O. M. Mason, president, 435 Leader News Building, Cleveland, Ohio. Principal office, Kent, Ohio. To manufacture automobile tire fabrics.

Matthews Auto Tire & Supply Co., March 4, 1919 (Delaware), $100,000. J. B. Scott, New York City; C. Heilig, M. M. Lucey—both of Wilmington, Delaware. Delaware Agent, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture, purchase and sell tires.

Mirandon, Joseph E., Inc., March 13, 1919 (New Jersey), $50,000. E., J. E., and L. Mirandon—all of 577 Madison avenue, Paterson, New Jersey. Principal office, 568-570 Madison avenue, Paterson, New Jersey. Agent in charge, J. E. Mirandon. To buy, sell, trade and deal in any and all kinds of crude, refined and manufacturing rubber.

Montgomery Stewart Corp., February 25, 1919 (Pennsylvania, $110,000. M. Montgomery, H. M. Stewart, C. S. Wagoner—all of Philadelphia, Pennsylvania. Principal office, Philadelphia, Pennsylvania. To manufacture and sell rubber goods.

Obalski & Co., X. W., Inc., February 27, 1919 (New York), $200,000. X. W. Obalski, E. A. Etzkorn—both of 291 Broadway; W. P. McKown, 50 Church street—all of New York City. To deal in crude rubber.

Pacific Tube & Rubber Co., February 3, 1919 (California), $250,000. H. J. Beck, 6826 Sunset Place; E. L. Ide, 312 East 30th street; S. F. Bothwell, Title Insurance Building—all of Los Angeles, California. Principal office, Los Angeles, California. To manufacture mechanical rubber products.

Park Mfg. Co., March 5, 1919 (Massachusetts) $25,000. T. Crabtree, J. V. and M. P. Critchley—all of Worcester, Massachusetts. Principal office, Worcester, Massachusetts. To manufacture and deal in rubber goods.

Perfection Tire Shop, Inc., February 20, 1919 (New York), $3,500. L. Bassett, M. and S. L. Jacobs—all of 22 Brandywine avenue, Schenectady, New York. To repair tires, etc.

Record Tire & Mfg. Co. of New Jersey, Inc., March 4, 1919 (New Jersey), $50,000. J. H. Coghill, Normandie Park; F. B. Waller, 27 Frankling street, both of Morristown, New Jersey; H. F. Hartjen, 375 East 209th street, New York City. Principal office, 13-15 Franklin street, Newark, New Jersey. Agent in charge, F. B. Waller. To manufacture, buy, sell and deal in tires, tubes, etc.

Redex Tire Retread Co., Inc., February 27, 1919 (New York), $5,000. R. L. Garmont, 327 West 28th street; J. A. and T. F. Mulvihill, both of 2 Rector street—all of New York City. To retread tires.

Royal Tire & Rubber Co., March 3, 1919 (Delaware), $50,000. H. L. Fry, H. King, T. C. Bollard—all of Mahoningtown, Pennsylvania. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture and sell tires, tubes, and other rubber articles.

Royce Tire & Supply Co., Inc., March 10, 1919 (New York), $5,000. M. Rosenthal, S. Berman, A. Silinsky—all of 41 Park Row, New York City. To deal in tires and supplies.

St. Louis Rubber Cement Co., March 6, 1919 (Delaware), $125,000. C. L. Rimlinger, M. M. Clancy, P. B. Drew—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, produce, and deal in rubber cement.

Solid Tire Sales & Service Co., Inc., March 21, 1919 (New York), $5,000. A. Meinken, 686 Park Place; W. Schulze, 269 Maple street; W. N. Maclean, 329 Hancock street—all of Brooklyn, New York. To deal in tires.

Stapleton Tire & Rubber Co., Inc., March 20, 1919 (New York), $4,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Sweeney & Company, Inc., February 27, 1919 (New York), $200,000. E. C. and G. R. Sweeney, both of 24 Stone street; W. P. McKown, 50 Church street—all of New York City. To deal in crude rubber.

Tennessee Tire & Rubber Co., Inc., March 10, 1919 (New York), $5,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Tire Stores Corp., March 18, 1919 (New York), $1,000. E. H. Burger, 59 West 183d street; W. Singer, 546 East 57th street; B. Raphael, Hotel Grenoble—all of New York City. To deal in tires.

Union Hill Tire Sales Station, Inc., March 4, 1919 (New York), $4,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To conduct a tire business.

United States Comb Co., Inc., January 2, 1919 (New York). $1,000. F. Achels, W. W. Weitling, E. W. Belcher—all of 11 Mercer street, New York City. To manufacture rubber goods.

Valley Tire & Rubber Co., Inc., March 4, 1919 (New York). $2,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires, etc.

Wear-Well Tire Co., February 20, 1919 (Delaware). $50,000. J. H. McCann, 913 West Clayton street; G. C. Large, 207 Second street; M. F. Sheaffer, Liberty street—all of New Castle, Pennsylvania. Principal office with the Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture, sell, and repair pneumatic automobile tires and tubes.

Webster Tire Co., Inc., March 5, 1919 (New York). $500. S. Dorfman, 511 West 178th street; L. Bernstein, 656 West 162d street; L. F. Gahan, 221 Sherman avenue—all of New York City. To manufacture tires, etc.

Wellington Rubber & Novelty Co., The, March 10, 1919 (Ohio). $15,000. G. E. Gorz, president; R. Koontz, treasurer and general superintendent; J. M. Oberholtzer, vice-president and secretary—all of Wellington, Ohio. Principal office, Wellington, Ohio. To manufacture balloons and dipped rubber goods.

Wenstone Rubber Products Co., March 3, 1919 (Delaware). $500,000. S. C. Wood, A. M. Brody—all of 30 North La Salle street, Chicago, Illinois; L. B. Phillips, Dover, Delaware. Delaware agent, United States Corporation Co., Dover, Delaware. To manufacture and deal in rubber, etc.

West Gate Tire & Rubber Co., Inc., March 18, 1919 (New York). $5,000. J. Jacobs, S. Bernheim, W. Loewenthal—1877 Broadway, New York City. To manufacture tires.

CRUDE RUBBER CONCERN INCORPORATES.

X. W. Obalski & Co., Inc., is a new concern incorporated by Xavier W. Obalski and others under the laws of New York, with a capital of $200,000, to deal in crude rubber and rubber products. The offices of the new company are at 291 Broadway, known as the East River Savings Institution Building. Mr. Obalski was formerly a member of Obalski & Sweeney, Inc., incorporated in 1915, which recently dissolved under the laws of the State of New York.

NEW CRUDE RUBBER CONCERN.

Sweeney & Co., Inc., is the title of a new corporation, organized under New York laws with a capital of $200,000, for the purpose of importing and dealing in crude rubber, with offices at 59-61 Pearl street, New York City, formerly occupied by Obalski & Sweeney, Inc., of which company Mr. Sweeney was president.

Mr. E. C. Sweeney, Jr., president of Sweeney & Co., Inc., has an extensive acquaintance and connections among the rubber manufacturers of this country and Canada and the new company commences business under the happiest possible auspices.

The other officers of the company are: George R. Sweeney, brother of the president, who has been elected treasurer and secretary, and George W. Sniffen, assistant secretary.

CAMERON MACHINE CO.'S ADDITION.

The Cameron Machine Co., 57-61 Poplar street, Brooklyn, New York, manufacturer of cutting and rolling machinery, slitters, rewinders, et cetera, has recently completed a one-story addition to its plant, to be used as an assembly shop. It has been equipped at an approximate cost of $20,000, and is now in use.

ASSEMBLY SHOP OF CAMERON MACHINE CO.

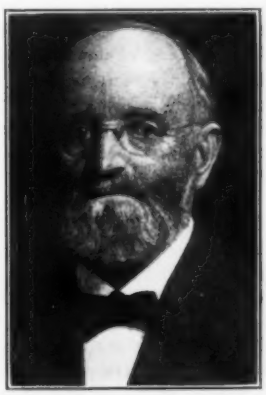
A PIONEER IN ELECTRICAL INSULATION.

AN interesting double anniversary was recently celebrated in Newark, New Jersey.

It commemorated the ninetieth birthday of Henry A. Reed, president of the Bishop Gutta Percha Co., and the fiftieth birthday of his second son, Henry D. Reed, vice-president of the same company. The great age of the "gutta percha pioneer" as well as his industrial accomplishments make a review of his career of more than passing interest.

Henry A. Reed was born in Carmel, New York, February 11, 1829. At the age of 17 he began teaching school in Carmel, and learned telegraphy. In 1849 he was given charge of the telegraph office in Carmel, and later transferred to Croton Falls, then to Hudson, and in 1852 was appointed one of the three operators in the New York City office of the New York, Albany and Buffalo Telegraph Co. Taking charge of the telegraph business

HENRY D. REED.



HENRY A. REED.

in Poughkeepsie in 1853, he had much time on his hands and thereupon opened a book store, and successfully managed both businesses. In 1876 he sold the book business, taking up expert accounting, and soon after assisted in the management of the estate of Mrs. Samuel C. Bishop, which was operating the Bishop Gutta Percha Works, and which was at that time threatened with a law-suit for infringement of the Sampson patent, covering the use of gutta eprcha as an insulating material. A similar action had been decided against the Western Union Telegraph Co., but through the investigations of Mr. Reed an arrangement was made, whereby the suit against the Bishop company was withdrawn, the company agreeing to pay a royalty during the few remaining years of the patent.

Mr. Reed was made secretary of the company in 1885, and two years later, general manager. In 1893 he was elected treasurer. In 1905 he became president of the company, the position he now holds. Mr. Reed has always taken a practical interest in electrical science and development. Believing that rubber would serve better than gutta percha for insulation, except under water, he engaged an experienced engineer to design and install machinery to insulate wire and cables with rubber. He collaborated with the United States Light House Board in 1887 in devising a system for lighting river channels by lighted buoys and range lights. In 1888 he designed the first high-tension cables to be used underground. He was the first man in America to test faults by the galvanometer. He exhibited at the Electric Club in New York the first perfected phonograph made by Mr. Edison. He was one of the organizers of the Electric Club, and also of the Electric Trade Society, and is a member of the American Institute of Electrical Engineers.

Mr. Reed carries his ninety years lightly and is without question the youngest man of his age in the whole rubber trade.

TRADE NOTES.

The Rubber Trading Co., 9-15 Murray street, New York City, by unanimous consent of its stockholders has dissolved and a co-partnership has been formed to take over the business. The name remains the same and the members of the co-partnership are William T., Collier W., and Robert Lyle Baird, general partners, with Robert B. Baird as special partner.

The Gillette Tire Co., 1122 South Michigan avenue, Chicago, Illinois, has opened a distributing office at 347 Locust street, St. Louis, Missouri.

The Story Rubber Corp., 1328 Broadway, New York City, has purchased a plant at Hempstead, Long Island, where it expects soon to manufacture its "Bonner" tubes. The officers of the company are: Ernest D. Story, president; Elmer G. Story, vice-president, and Charles S. Fowler, treasurer.

The Kelly-Springfield Tire Co., New York City, at its annual meeting of stockholders, held March 14, 1919, reelected the following directors: Van H. Cartmell, Stephen Peabody, A. L. Scheuer, Jacob Oppenheim, Gustavus Maas, A. M. Poole, O. R. Cook, and F. A. Seaman.

The Lincoln Tire & Rubber Co., Detroit, Mich., has leased the entire building at No. 224, in addition to its previous location at No. 226, Jefferson Avenue East. This concern sells Meyer, Portage, Mohawk, Pennsylvania, and United States tires, and is sole distributor of Meyer tires for seven of the Central States. Guy B. Cross, president, is one of the directors of The Meyer Rubber Co., Cleveland, Ohio.

The Batavia Rubber Co., Batavia, New York, has been granted an order in the United States Circuit Court, terminating the receivership of M. H. Bochow. Mr. Bochow continues, however, as president. The creditors of the company received 50 per cent of their claims during the receivership and will now be paid the remainder. The company's plant is now running 24 hours daily, with three shifts of workmen.

The Ford Motor Co., automobile manufacturer, Detroit, Michigan, has built and is operating a small rubber tire factory, "simply learning how," it says, without intending at the present time to go into the manufacture of tires in any volume.

The Horseshoe Rubber Co., distributor of the Racine Auto Tire Co., Racine, Wisconsin, now has branches in fifteen cities of the United States.

The Broadway Tire Jobbers, Inc., 250 West 54th street, New York City, recently incorporated at $125,000, carries standard makes of factory-blemished tires converted into seconds, as well as tubes, which it supplies to dealers.

The Lee Rubber & Tire Corp., New York City, held its annual meeting of stockholders on March 27, 1919, at its offices at 61 Broadway. The third annual report of the company for the fiscal year ended December 31, 1918, shows net sales for the year amounting to $4,609,924.47, and a net profit of $200,348.20, after deducting for federal taxes.

The Parker Tire & Rubber Co., 1014 Merchants Bank Building, Indianapolis, Indiana, is specializing on supersizes of cord tires. The company has completed its plant, 250 by 60 feet, with a boiler house 60 by 30 feet.

The Overland Tire & Rubber Co., Omaha, Nebraska, at its stockholders' annual meeting in January elected the following officers: James H. Davies, president; W. R. Blowers, vice-president and general manager, and Harry Hildreth, Jr., secretary-treasurer. The concern also voted to spend $200,000 for machinery and an equal amount for buildings to comprise the first unit of its factory. The foundations and footings up to the first floor are now completed. The company expects to operate the factory about September 1, 1919. It will manufacture pneumatic tires and tubes, solid truck tires, and a general line of mechanical rubber goods.

The Nebraska Tire & Rubber Co., Inc., 3167 Spaulding street, Omaha, Nebraska, has recently elected W. W. Wuchter treasurer and general manager of the company, succeeding E. G. Wolfe, resigned. The other officers are: Alva Smith,, president; G. C. Feironnet, vice-president, and F. M. Holloway, secretary. These, with J. E. Cornish and S. C. Wolfe, compose the directorate. The concern is reorganizing under these officials and will equip its plant with the latest improved machinery, to begin operations July 1, 1919.

The Globe Rubber Tire Manufacturing Co., 1851 Broadway, New York City, at its annual stockholders' meeting on February 4, 1919, elected the following officers: J. B. Linerd, president; H. W. Kugler and H. L. Hornberger, vice-presidents; F. H. Craig, secretary; H. B. James, treasurer, and R. E. Glass, assistant treasurer.

The Advance Rubber Co., 1717 Eighth avenue, Brooklyn, New York, has increased its capital from $150,000 to $1,000,000.

The McGraw Tire & Rubber Co. of New York, Inc., has leased the store at 1891 Broadway, New York City, and has also recently opened several new branches in other cities.

The Standard Four Tire Co., Keokuk, Iowa, is to build a two-story addition with basement to its plant, 60 by 125 feet. It will be equipped with new machinery with a view to increasing the company's production to about 1,000 tires daily. It is now turning out about 425 tires and 150 tubes a day.

The Johnstone Tire & Rubber Co., Peoples Gas Building, Chicago, Illinois, at its meeting held January 22, 1919, elected the following officers: E. C. Walton, president; B. R. Blackwelder, vice-president, and C. W Mussey, secretary-treasurer. The concern is preparing to put on the market its patented braided cord tire, but at present is manufacturing solid truck and pneumatic fabric tires.

Henry P. and LeRoy H. Rindskopf, president and secretary-treasurer, respectively, of the Brooklyn Shield & Rubber Co., 397 Sumner avenue, Brooklyn, New York, have changed their name to Rand. Announcement of this was made March 10, 1919.

The Traveler Rubber Co. of Bethlehem, U. S. A., with offices in the Traveler Building, Philadelphia, Pennsylvania, will break ground about April 1, for a new two-story automobile tire plant, 60 by 200 feet, with power plant, at Bethlehem, Pennsylvania. The cost is estimated at $250,000.

The Chester Novelty Co., Inc., Chester, New York, manufacturerer of novelties, including the "American Inkless War Pen," illustrated in our issue of August 1, 1918, has increased its capital from $15,000 to $60,000.

The trade-mark "Lowell," used by the J. Spencer Turner Co., New York City, on its yacht duck, is now to be used also on its tire fabric. These goods were formerly sold by the Boston Yarn Co., Boston, Massachusetts, but are now handled exclusively by the Turner company.

The New Jersey Zinc Co. held a house-warming at its new home, 160 Front street, New York City, on March 7, 1919, arranged by C. A. Stedman, advertising manager. Moving pictures were shown and views of the company's mines at Franklin, New Jersey. F. C. Ryan gave a talk on the development of the industry. Before leaving, the guests were shown over the building, which contains, among other interesting features, a museum of a great variety of zinc products. A detailed description of the building, illustrated, was given in our issue of February 1, 1919.

The Okonite Co., 501 Fifth avenue, New York City, has increased its capital stock from $650,000 to $1,500,000, to consist of $1,000,000 common and $500,000 preferred, of which only $200,000 preferred is to be issued at present.

The Morse Chain Co., Ithaca, New York, has announced the removal of the Kansas City office of its western representative, the Morse Engineering Co., from the R. A. Long Building, to 211-212 Finance Building. W. V. Warner is district manager in Kansas City.

The Belden Manufacturing Co., 23d street and Western avenue, Chicago, Illinois, manufacturer of rubber-insulated wire and cable, has increased its capital from $1,000,000 to $1,500,000, the additional stock to be issued as the demands of the business necessitate.

L. H. Homer, former treasurer of the Smith & Dove Manufacturing Co., Andover, Massachusetts, has been elected treasurer of the Carlisle Cord Tire Co., Inc., of the same town.

The Hood Rubber Co., Watertown, Massachusetts, is building a one-story addition to its garage, to cost approximately $12,000.

SIXTH ANNUAL REPORT OF THE FISK RUBBER CO.

The sixth annual report of The Fisk Rubber Co., Chicopee Falls, Massachusetts, shows the following figures after being summarized:

ASSETS.

Property, equipment, etc., less depreciation, replacements, etc.	$7,775,479.95	
Leasehold property	5,169.39	
Good will	8,000,000.00	
		$15,780,649.34
Investments, including Liberty Bonds, less deductions		334,599.18
Current assets, including supplies, notes and accounts receivable, cash, etc.		22,298,491.03
Deferred charges, including rents and other prepaid items		315,038.53
Capital stock outstanding		21,129,900.00

LIABILITIES.

Current liabilities, including accounts payable, accrued wages, etc.		9,742,184.79
Provision for Federal taxes		1,253,426.61
Reserves for insurance, mileage, etc.		238,801.14
Surplus for retirement of preferred stocks		1,938,542.19
Surplus per attached statement		4,425,923.35

PROFIT AND LOSS AND SURPLUS ACCOUNT.

Surplus—balance December 31, 1917, less Federal taxes, 1917		3,455,479.34
Net profits, year ended December 31, 1918, after deductions		3,760,279.84
		7,215,759.18
Dividends paid	$946,750.00	
Appropriation for retirement of preferred stocks in 1919	589,659.22	
Estimated Federal taxes, 1918	1,253,426.61	
		2,789,835.83
Surplus balance December 31, 1918		$4,425,923.35

(Net sales, $36,682,163.78.)

HOOD RUBBER CO. STATEMENT.

The Hood Rubber Co., Watertown, Massachusetts, has issued the following condensed balance sheet dated December 31, 1918, and subject to a reserve for income and excess profits taxes.

ASSETS

Plant (real estate, machinery, etc.)	$4,000,000.00
Merchandise	8,012,861.89
Accounts receivable	1,202,350.20
Cash	1,022,877.49
Investments in other corporations	285,400.00
Patents	1,000.00
Liberty Bond account	521,020.13
	$15,045,509.71

LIABILITIES

Capital Stock—common	$3,000,000.00	
—preferred	4,000,000.00	
		$7,000,000.00
Notes payable		4,725,000.00
Accounts payable		148,904.73
Surplus		2,666,604.98
Liberty Bond account		505,000.00
		$15,045,509.71

Merchandise in process of importation and letters of credit and drafts discounted in connection therewith, are not included in the foregoing statement.

FIRST DIVIDEND TO PETLEY CREDITORS.

The trustee for the Petley Rubber Co., Julius J. Goetz, 28 Miller Block, Milwaukee, Wisconsin, has paid a first dividend of 20 per cent to creditors and states that another will be paid in about two months when the final payment is due from the Everwear Rubber Co. which purchased the machinery from the Petley company. The trustee also states that there will be considerable shrinkage on the accounts receivable, due to apparently legitimate disputes.

CONNECTICUT NOTES.

Hartford was host, beginning with the evening of March 17, to fifty salesmen of the United States Tire Co. and officers of the United States Rubber Co. and the Hartford Rubber Works. A banquet was held at the Hotel Bond, and the out-of-town men remained for several days to hear addresses on sales efficiency and kindred topics.

The L. Candee Rubber Co., New Haven, Connecticut, has curtailed its running time to five days weekly, but it is expected to be a temporary schedule.

The bowling team of the L. Candee Rubber Co., New Haven, Connecticut, recently won from the bowling team of The Goodyear's Metallic Rubber Shoe Co., Naugatuck, the United States Rubber Co.'s trophy by winning two games out of three. The teams are now even, and two more matches must be played before the permanent ownership of the cup will be determined.

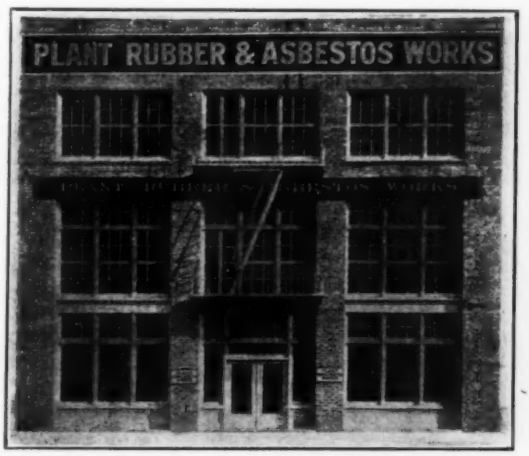
The American Tire Co., Inc., New Britain, Connecticut, has opened an office at 166 Main street and expects soon to increase its capitalization. It was incorporated in 1918 at $50,000, with the following officers: George L. Giller, president; Albert W. Meyers, vice-president; Philip Bardeck, treasurer; Louis W. Podt, secretary. These, with John C. Calloghan of Cohoes, New York, compose the directorate.

The Kelly-Springfield Tire Co., New York City, has established a direct factory branch at 359 Fairfield avenue, Bridgeport, Connecticut, in connection with a service station. A complete stock of tires and tubes will be carried.

A PROGRESSIVE CONCERN.

The Plant Rubber & Asbestos Co., 537-539 Brannan street, San Francisco, California, maker of mechanical rubber goods, and pipe and boiler coverings, has recently installed an up-to-date equipment for the manufacture of high-pressure asbestos packing.

This company that began business in 1898, specializing in steam packing and engineers' supplies, has grown steadily from the start and now occupies a three-story building comprising 40,000 square feet of floor space, and employs from 80 to 100 hands. The officers are: S. L. Plant, president; Charles A. Wright, vice-president; E. H. Pierce, secretary, and George J. Sivers, treasurer.



NEW FACTORY OF THE PLANT RUBBER & ASBESTOS CO.

The Meyer Rubber Co., Cleveland, Ohio, has purchased the plant of The Columbian Manufacturing Co., Columbiana, and is equipping it for the manufacture of pneumatic tires. It expects to operate the factory about April 15.

PERSONAL MENTION.

C. S. Putnam has been appointed branch manager of the United States Tire Co., New York City, at 245 Jefferson avenue, East, Detroit, Michigan. He has been with the company since 1911, advancing from the position of stock record clerk to city sales manager.

John B. Maus, export sales manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has recently been elected chairman of the Foreign Trade Division of the Springfield (Massachusetts) Associated Interests.

A. F. Hill, for nine years with the New York Commercial Co. and for five years subsequently with the Rubber & Guayule Agency, has opened an office at 290 Broadway, New York City, where he will operate as a broker in crude rubber and allied gums. For the last year and a half Mr. Hill has been stationed at Camp Merritt as a government auditor.

A. G. Langher, former central district manager for the Diamond Rubber Co., Akron, Ohio, has been made central district manager of the Carlisle Cord Tire Co., Inc., Andover, Massachusetts, with headquarters at Chicago, Illinois.

Lee Anderson, formerly supervisor of wholesale branches, sales manager, and general manager, successively, of the Hupp Motor Car Corp., Detroit, Michigan, has become associated with Theodore F. McManus, Inc., a well-known advertising agency of the same city, which handles a number of automobile and rubber company accounts.

Miss Alice Nash, the well-known golf specialist, has become associated with the New York City office of Thos. E. Wilson & Co., Chicago, Illinois, manufacturers of sporting goods, game balls, etc.

W. G. Westlake has been appointed eastern sales manager of the motor truck tire department of The McGraw Tire & Rubber Co. of New York, Inc., 1891 Broadway, New York City.

R. S. Hardy has opened an office at 82 Beaver street, New York City, as a broker in crude rubber and allied products. He was formerly with J. T. Johnstone & Co.

C. F. Troupe has succeeded Frank M. Lee, resigned, as Milwaukee branch manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, with headquarters at 452 Milwaukee street, Milwaukee, Wisconsin. His territory covers twelve counties of the State of Wisconsin. He has been in the employ of the Fisk company nine years as special representative in different localities.

W. J. Gallagher, managing director of the United States Rubber Plantations, Inc., is returning from a visit to Ireland with his wife, and will go on to the company's plantations in Sumatra via the Pacific after a short stay in New York City. His recently elected executive assistant, George H. Seybold, left early in March for the plantations, by way of Liverpool from New York City.

David M. Figart, manager of the Singapore office of the United States Rubber Plantations, Inc., sailed with his wife late in February for the plantations after a visit in the States.

Philip Belford, manager of the Singapore office of the General Rubber Co., is visiting New York City.

L. J. D. Healy, for three years chief chemist and director of development work at the plant of the Federal Rubber Co., Cudahy, Wisconsin, has been placed in charge of the construction of the new "Horseshoe" cord tire and the new "Re-Cord" inner tube of the Racine Auto Tire Co., Racine, Wisconsin.

Myron H. Clark, general footwear factory manager of the United States Rubber Co., sailed recently for an extended business trip abroad in the interests of the company. His plans are to visit England, France and Italy.

Frank C. Thompson has been appointed purchasing agent for the Indianpolis plant of the Link-Belt Co., Chicago, Illinois, succeeding John E. Shideler.

Fred Stadelman, with the Wellman-Seaver-Morgan Co., Cleveland, Ohio, has been elected a director of the newly formed Material Handling Machinery Manufacturers' Association, which has offices at 35 West 39th street, New York City.

C. W. Johnson has been appointed assistant manager of works of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, in whose employ he has been since 1907, first as chief inspector of works, and later as general superintendent. Mr. Johnson is a member of the American Society of Mechanical Engineers, American Institute of Mining Engineers, and the Engineers' Society of Western Pennsylvania.

W. J. Glendenning, consulting engineer and rubber, asbestos and balata expert, recently installed a department for the manufacture of asbestos high-pressure packing for the Plant Rubber & Asbestos Co., 537-539 Brannon street, San Francisco, California.

C. D. Studebaker has been appointed New York district manager for the Firestone Tire & Rubber Co., Akron, Ohio, to which position he has risen from that of credit manager for the New York branch seven years ago, subsequently becoming office manager and branch manager.

E. P. Jones succeeds C. D. Studebaker as New York branch manager of the Firestone Tire & Rubber Co., Akron, Ohio. He was formerly branch manager of the same company at Newark, New Jersey.

FREDERICK J. MAYWALD, F. C. S.

ONE of the best equipped laboratories in New York devoted to general analytic and chemical consulting work may be found in lower Manhattan not far from the "Swamp." Here, in fact, is a very interesting series of laboratories which occupy four floors of an old-time brick structure where the owner, Frederick J. Maywald, and his corps of assistants conduct investigations on the chemistry of many manufacturing processes, specializing in problems relating to rubber.

Frederick J. Maywald.

Mr. Maywald is a native New Yorker, born June 25, 1870. His education was obtained in the New York public schools and Cooper Union from which he graduated in 1889, and promptly opened at Bartow, Florida, a laboratory in connection with the development of the land pebble phosphate mines, of that section. In 1893 and 1894 he was a private student of the late Doctor Peter T. Austin at the Brooklyn Polytechnic Institute and conducted a general analytic and consulting laboratory in New York City. In 1894, Maywald joined Professor Austin in consulting work in the latter's laboratory and succeeded to the business on the death of Professor Austin, December 30, 1907. He has since conducted the laboratories on an enlarged basis. They are now equipped with facilities unsurpassed in New York, for practically every line of manufacture and test.

Among the laboratory departments should be noted the technical library of 4,000 volumes, and special departments for electro-chemical work, ultra-violet ray tests, underwriters' hydraulic tests on hose, spraying apparatus for study of air-conditioning and drying problems, and a complete rubber-manufacturing plant including machinery for washing and

vacuum-drying crude rubber, compounding, calendering, vulcanizing, etc.

During the war the resources of the Maywald laboratory have been devoted to inspecting specification goods for the United States Shipping Board and other government departments.

JAMES H. LEARNED.

JAMES H. LEARNED, who sails next month on another trip across the Atlantic, has had a varied experience since he graduated at the age of 15 from the public schools at Chelsea, Massachusetts. For a year he did clerical work in the office of Judge W. H. H. Emmons in Boston. The lawyer's profession not suiting his commercial ideas, he transferred his services to the sales department of the Revere Sugar Refinery, leaving there in 1888, and serving one year as bookkeeper at the shoe factory of Faunce & Spinney, Lynn, Massachusetts.

JAMES H. LEARNED.

But bookkeeping was not to his taste, and in 1890 he joined the force of the Revere Rubber Co., Boston, as city salesman, afterwards becoming sales manager of the New England department. Besides covering this territory, special business for the company required him to make one or two trips abroad annually for ten years previous to the opening of the European war, some of them extending over the Continent as far as Petrograd and Moscow, Russia.

As manager of the specialty department of the company, Mr. Learned has a widespread list of customers who regard him as a personal friend. He is fond of sports and is a crack golfer. He is a member of the Art Club and City Club of Boston, the Commonwealth and Country Clubs of Brookline, Massachusetts; the Rubber Association of America, New York City, and is high in Masonic bodies. He resides in Brookline, Massachusetts.

FISK SALES DISTRICTS REORGANIZED.

The remarkable growth of the business of The Fisk Rubber Co. in the East has made necessary the division of its New England and New York territories into two separate sales districts. These will be known as the New England district, with Walter Oakes as district manager, and the western New York district, with George T. Newton holding the district managership.

GEORGE T. NEWTON.

WALTER OAKES.

In his elevation to the New England district managership, Walter Oakes receives a promotion for which he is well fitted by twelve deserving years of service with the Fisk company. His long association with the tire trade of Boston, Massachusetts, has won for him a wide acquaintance whose best wishes go with him in his greater opportunity.

George T. Newton, who for the last three years has been in charge of Fisk sales in the two territories, will hereafter concentrate his efforts upon the supervision of direct factory branches in eight cities, including Buffalo, Syracuse, Rochester, Utica, Binghamton, Elmira and Albany, New York, and Erie, Pennsylvania. His headquarters will be at the Rochester branch.

FIRESTONE'S NEW ADVERTISING MANAGER.

Justin R. Weddell, who has recently been appointed advertising manager of the Firestone Tire & Rubber Co., Akron, Ohio, comes from the Corday & Gross Co., the well-known printing and advertising concern in Cleveland, Ohio, of which he was sales manager.

JUSTIN R. WEDDELL.

Mr. Weddell's wide acquaintance with national advertisers was acquired during his ten years' service with one of the large advertising agencies in Chicago, Illinois, and later with the Barnes-Crosby Engraving Co. of that city, of the Cleveland branch, of which concern he later became manager, developing the office by building up a special advertising service, with a large staff of artists and copy writers. This led to establishing the Weddell-Schmidt Co., in Cleveland, which enlarged still further Mr. Weddell's circle of clients and acquaintances.

This large business was amalgamated with the Corday & Gross Co., where Mr. Weddell's abilities as an organizer and developer of business were given full play, and he was appointed sales manager three years ago. He brings to his new position a thorough practical knowledge of every branch of the advertising business.

BABCOX GOES TO THE RUBBER PRODUCTS CO.

At the completion of its twentieth year of prosperous growth, The Rubber Products Co., Barberton, Ohio, announces the appointment of Edward S. Babcox as sales manager. Mr. Babcox goes to a company whose well-known products have been giving satisfaction to increasing thousands of users, and which, with the new Stronghold cord tire, soon to be ready for the trade, will offer a complete pneumatic tire line of great excellence. On the other hand, Mr. Babcox brings a wide experience to his new post. For the past six years he has been advertising manager of the Firestone Tire & Rubber Co., Akron, Ohio, and before that had been in charge of the advertising of the Burroughs Adding Machine Co., Detroit, Michigan, the Yawman & Erbe Manufacturing Co., Rochester, New York, and other nationally known organizations. He recently retired as president of the Audit Bureau of Circulations, and as vice-president of the Association of National Advertisers.

EDWARD S. BABCOX.

The Rubber Reclaimers' Division of The Rubber Association.

THE Rubber Reclaimers' Division of The Rubber Association of America is one of the most active divisions of that association, having an excellent record of accomplished results that are of benefit to the reclaiming industry. Therefore, some facts regarding the organization and its predecessor club may be of interest at this time.

Like many other trade associations, the Rubber Reclaimers' Club was the result of a get-together sentiment of the members of the trade to bring about better business relations among competitors, to solve business problems, and to eliminate trade abuses. A preliminary meeting was held in New York City on October 19, 1906, at which there were representatives from twelve leading reclaiming concerns. At this meeting, of which F. H. Appleton was chairman, and W. C. Coleman secretary, a committee was appointed to formulate a plan for forming an association. This committee consisted of F. H. Appleton, R. Loewenthal, A. W. Clapp, W. T. Rodenbach, and F. Schwab. The committee reported at a meeting at Hotel Belmont, New York City, on October 30, 1906, when the Rubber Reclaimers' Club was formed "to promote social intercourse and further the business interests of its members."

Francis H. Appleton,
Chairman.

Underwood & Underwood, N. Y.

Clark W. Harrison,
Vice-Chairman.

The charter membership included F. H. Appleton & Son, Bloomingdale Soft Rubber Works, E. H. Clapp Rubber Co., Canadian Consolidated Rubber Co., W. C. Coleman Co., Derby Rubber Co., Eureka Rubber Manufacturing Co., Hood Rubber Co., Loando Hard Rubber Co., Mechanical Rubber Co., New Jersey Rubber Co., Pequanoc Rubber Co., Philadelphia Rubber Works, Rickaby Rubber Co., Stockton Rubber Co., Joseph Stokes Rubber Co., United States Rubber Co., United States Rubber Reclaiming Works, and Westmoreland Rubber Co. At the meeting of November 8, 1906, the following were chosen as officers: A. W. Clapp, president; R. W. Seabury, secretary, and F. H. Appleton, treasurer.

On the death of President Clapp in 1907, W. T. Rodenbach, of the United States Rubber Reclaiming Co., was elected president, and on his resignation in November, 1908, J. A. Lambert, of the Empire Rubber Co., was chosen to that office. He was succeeded, in 1910, by Joseph F. McLean, of the Pequanoc Rubber Co., who had previously held the office of secretary. In 1911 F. H. Appleton, who had held the office of treasurer since the organization of the club, was elected president, and served in that capacity until the dissolution of the club in 1917.

At first the meetings were held monthly, but later, quarterly; meanwhile frequent committee meetings were held when necessary. At these quarterly meetings many important business questions were discussed, trade disputes considered, discussed and adjusted, and the whole trade brought into closer acquaintance. At each meeting the order of exercises was divided between "New Business" and "Experience Meeting," and during the latter many trade subjects were discussed to the benefit of the trade generally.

The most important measure in the history of the club, and the one which, aside from all others, would well justify its creation, was the establishment of a trade circular standardizing the sorting, packing and handling of rubber scrap. The first circular was issued in February, 1907, and others have been sent out annually each July since that date. This circular gives minute details which must be observed by the waste rubber dealers selling to the reclaimers and today the rules laid down in the current circular form the basis for all such sales.

J. S. Lowman.

R. A. Low.

J. S. Clapp.

E. A. Andersen.

J. F. McLean.

The circular gives rules for separating waste rubber into 31 grades, and has registered a telegraphic code for these grades which is much used in the business. It gives rules for methods of packing, circumstances under which consignments may be rejected, procedure for arbitration of disputes and similar rules which govern the methods of the business of buying and selling scrap rubber.

In 1917 it was decided that the activities of the club could be facilitated and advantage redound to the members if the club, as such, were dissolved and the members form a division of The Rubber Association of America. Accordingly, action to that effect was taken on February 8 of that year, and The Reclaimers' Division was instituted. The present officers are: Francis H. Appleton, chairman, F. H. Appleton & Sons, Inc.,

Boston, Massachusetts; Clark W. Harrison, vice-chairman, Bloomingdale Rubber Co., New York City; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: Francis H. Appleton, chairman; Clark W. Harrison, vice-chairman; E. A. Andersen, Rubber Regenerating Co., Naugatuck, Connecticut; John S. Clapp, E. H. Clapp Rubber Co., Boston, Massachusetts; R. A. Low, United States Rubber Reclaiming Co., Inc., New York City; John S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio; Joseph F. McLean, Pequanoc Rubber Co., Butler, New Jersey.

The executive committee meets the second Tuesday in each month, and the division holds meetings quarterly. At one of the meetings plans were made to compile a complete census of the reclaiming industry and a technical committee was appointed to take up all matters of a technical nature presented by the reclaimers for research and experiment.

The present membership of the Division includes: F. H. Appleton & Son, Inc., Boston, Massachusetts; Bloomingdale Rubber Co., New York City; Boston Woven Hose Co., Cambridge, Massachusetts; E. H. Clapp Rubber Co., Boston, Massachusetts; Corona Rubber Reclaiming Co., Philadelphia, Pennsylvania; Goodyear Tire & Rubber Co., Akron, Ohio; Gutta Percha & Rubber, Limited, Toronto, Ontario, Canada; Hood Rubber Co., Watertown, Massachusetts; New Jersey Rubber Co., Boston, Massachusetts; Pennsylvania Rubber Co., Jeannette, Pennsylvania; Pequanoc Rubber Co., Butler, New Jersey; Philadelphia Rubber Works Co., Akron, Ohio, and Philadelphia, Pennsylvania; Republic Rubber Corp., Youngstown, Ohio; Rubber Regenerating Co., Naugatuck, Connecticut; Rubber Regenerating Co. of Canada, Montreal, Quebec, Canada; Stockton Rubber Co., Stockton, New Jersey; United States Rubber Reclaiming Co., New York City, New York, and the Xylos Rubber Co., Akron, Ohio.

Activities of The Rubber Association of America, Inc.

MANUFACTURERS SUPPORT THE CRUDE RUBBER CHARGE.

MANUFACTURERS representing 95 per cent of the crude rubber consumed annually in the United States have agreed to pay The Rubber Association three cents per hundred pounds on all crude rubber purchased by them. The amount is to be added to the manufacturer's invoice by the importer, dealer, or broker who will remit the monthly collections to The Rubber Association. This charge became effective on and after March 1, 1919, on all rubber invoiced to the following manufacturers who are members of the Association:

RUBBER MANUFACTURERS, WHO HAVE SIGNED THE AGREEMENT.[1]

A.

Acme Rubber Mfg. Co.
Acushnet Process Co.
Ajax Rubber Co., Inc.
Amazon Rubber Co.
American Hard Rubber Co.
Apsley Rubber Co.
Archer Rubber Co.
Archer Strauss Rubber Co.
Armstrong Rubber Co., Inc.
Avon Sole Co.

B.

Batavia Rubber Co., The.
Baumann Rubber Co.
Beacon Falls Rubber Shoe Co.
Beacon Tire Co., Inc.
BeSaw Tire & Rubber Co.
Bishop Gutta-Percha Co.
Boston Belting Corp.
Boston Blacking Co.
Boston Woven Hose & Rubber Co.
Bourn Rubber Co.
Braender Rubber & Tire Co.
British-American Mfg. Co.
Brunswick-Balke-Collender Co.

C.

Cambridge Rubber Co.
Canadian Consolidated Rubber Co.
Canfield Company, H. O.
Canton Rubber Co., The.
Carlisle Cord Tire Co., Inc.
Carlisle Tire & Rubber Co.
Carr Rubber Co., F. S.
Century-Plainfield Tire Co.
Century Rubber Works
Chicago Rubber Clothing Co.
Chippewa Rubber Co.
Cincinnati Rubber Mfg. Co.
Clifton Manufacturing Co.
Columbia Tire & Rubber Co., The.
Combination Rubber Mfg. Co.
Continental Rubber Works.
Converse Rubber Shoe Co.
Corona Rubber Reclaiming Wks.
Crescent Insulated W. & C. Co.
Cross Country Tire Co., Inc.
Cupples Co.

D.

Davidson Rubber Co.
Davol Rubber Co.
Dayton Rubber Mfg. Co.
Defion Tire & Rubber Co.
Doherty Rubber Works, Inc., Eugene.
Doss Rubber and Tube Co.
Dryden Rubber Co.
Du Pont-Fabrikoid Co.
Dural Rubber Corp.

E.

Eagle Rubber Co.
Easthampton Rubber Thread Co.
Electric Hose & Rubber Co.
Elkart Rubber Works.
Empire Tire & Rubber Corp.
Essex Rubber Company.

F.

Faber Rubber Co., Eberhard.
Falls Rubber Company, The.
Faultless Rubber Co.
Featheredge Rubber Co.
Federal Rubber Co., The.
Firestone Tire & Rubber Co.
Fisk Rubber Co., The.

G.

Gates Rubber Co.
General Rubber Co.
General Tire & Rubber Co.
Gillette Rubber Co.
Globe Rubber Tire Mfg. Co.
Goodrich Co., The B. F.
Goodyear Rubber Co.
Goodyear Rubber Insulating Co.
Goodyear Tire & Rubber Co., The.
Gordon Tire & Rubber Co.

H.

Hale Rubber Co., Alfred.
Hamilton Rubber Mfg. Co.
Hardman Rubber Corporation.
Hauthaway & Sons, C. L.
Hawkeye Tire & Rubber Co., The.
Hazard Mfg. Co.
Hazen-Brown Co.
Hewitt Rubber Co.
Hodgman Rubber Co.
Home Rubber Company.
Hood Rubber Co.
Howe Rubber Co.

I.

Indiana Rubber & Insulated Wire Co.
Inland Rubber Co.
International India Rubber Corp.

J.

Jenkins Rubber Co.

K.

Kaufman Rubber Co., Ltd.
Kelly-Springfield Tire Co.
Keystone Rubber Mfg. Co.
Kleinert Rubber Co., I. B.
Kokomo Rubber Co.

L.

Lancaster Tire & Rubber Co., The.
Lee Tire & Rubber Company.
Long-Wear Rubber Co.
Lovell Manufacturing Co.
Luzerne Rubber Co.

M.

McCreary Tire & Rubber Company.
McGraw Tire & Rubber Co., The.
McLean Tire & Rubber Co., The.
Mansfield Tire & Rubber Co.
Marathon Tire & Rubber Co.
Marion Tire & Rubber Co.
Mason Tire & Rubber Co.
Massillon Rubber Co.
Meade Rubber Co.
Mercer Rubber Co.
Michelin Tire Co.
Miller Rubber Co.
Mishawaka Woolen Mfg. Co.
Mohawk Rubber Company, The.
Mystic Rubber Corp.

N.

National Rubber Co.
National Tire & Rubber Co.
Needham Tire Co.
Newark Rubber Co.
New Jersey Car Spring & Rubber Co., Inc.
New York Insulated Wire Co.
New York Mackintosh Clothing Co.
Norwalk Tire & Rubber Co.

O.

O'Bannon Corporation.
Okonite Co.
Omo Manufacturing Co., The.

P.

Panther Rubber Mfg. Co.
Parker, Stearns & Co.
Partridge Rubber Co., Ltd., The F. E.
Pennsylvania Rubber Co.
Pharis Tire & Rubber Co.
Phœnix-Hermetic Co.
Phoenix Rubber Co., The.
Pines Rubber Co., Inc.
Plymouth Rubber Co.
Polack Tyre & Rubber Co.
Portage Rubber Co.
Portland Rubber Mills.

Q.

Quabaug Rubber Co.
Quaker City Rubber Co.

R.

Racine Auto Tire Co.,
Raybestos Rubber Co.
Ray Tire & Rubber Co.
Ravenna Rubber Co.
Reading Rubber Manufacturing Co.
Republic Rubber Corp.
Rex-Hide Rubber Mfg. Co.
Roberts Rubber Co., Welton.
Rosenwald & Weil.
Rubber Products Co.
Ryan Ideal Stain & Blkg. Co.

S.

St. Mungo Mfg. Co. of America.
Samson Tire and Rubber Corp.
Savage Tire Co., The.
Seamless Rubber Co.
Schwarzwaelder Co., The.
Scioto Rubber Co.
Simplex Wire & Cable Co.
Sioux City Tire & Mfg. Co.
Somerset Rubber Reclaiming Wks.
Spalding & Bros., A. G.
Sprague Tire & Rubber Co.
Stamford Rubber Supply Co.
Standard Four Tire Co.
Standard Underground Cable Co.
Star Rubber Co.
Sterling Tire Corp.
Stowe & Woodward Co.
Surety Tire & Rubber Co.
Swinehart Tire & Rubber Co.

T.

Thermoid Rubber Co.
Traun Rubber Co.
Twin Tube & Rubber Co.
Tyer Rubber Co.

U.

United & Globe Rubber Co.
United States Rubber Co.

V.

Van Cleef Bros.
Victor Balata & Textile Belting Co.
Victor Rubber Co.
Voorhees Rubber Mfg. Co.
Vulcan Proofing Co.
Vulcanized Rubber Co.

W.

Western Rubber Co.
Whitall Tatum Co.
White Dental Mfg. Co., S. S.
Whitehead Bros., Rubber Co.
Whitney Blake Co.
Worthington Ball Co.

[1] Additions to this list will be published in our next issue.

PLAN FOR COLLECTING RUBBER INDUSTRY STATISTICS.

MARCH 24, 1919.

To the firm members of The Rubber Association of America:

The statistics on the rubber industry collected by our War Service Committee in 1918 were of value not only to the Government but also to the individual members of the industry. They presented, for the first time in the history of the rubber trade, a complete picture of the industry—its size, the amount of rubber consumed in total and by classes of articles, the value and quantity of output, and stocks of crude rubber on hand and in transit at various periods.

The unquestioned value of these statistics suggests the desirability of our continuing to collect them in 1919 and thereafter, under conditions which would insure proper secrecy for the returns from separate manufacturers, and which would provide for the publication of total figures only for the entire industry and the distribution of these totals to manufacturers who co-operated by making returns for their plants. The value to the Government, as well as to the industry, of a continuation of the statistics is indicated by the following quotation from a letter from the Honorable W. C. Redfield, Secretary of Commerce:

> "I deem it of importance to the country and of value to this department to have the collection of rubber industry statistics continued. I earnestly hope the work will go on, and we shall be more than glad to have the privilege of using the statistics when they are gathered."

It is assumed by your directors that if proper means may be provided for insuring the secret custody of the individual reports, the main objection to rendering such reports—if any—may be obviated. To this end negotiations have been taken up with one of the largest trust companies in the country, and it will be possible to arrange for all questionnaires to be sent to them and tabulated by them as to the end-figures for distribution to the trade. To start with, we will not ask for questionnaires at more frequent intervals than semi-annually.

Would you be willing to continue making returns of the sort suggested herein, provided,

(1) That manufacturers representing approximately 90 per cent of the industry (based on volume of business) agreed to cooperate in furnishing the statistics?

(2) That publication of the information given confidentially should be only of total figures for the entire industry, and this data should be distributed only to manufacturers who aided in collecting it, by furnishing the necessary statistics?

We are enclosing herewith a blank which we hope you will be willing to sign and return to the Secretary in the enclosed stamped envelope.

THE SECRETARY.

CALENDERED RUBBER CLOTHING SECTION FORMED.

The Calendered Rubber Clothing Section of the Rubber Clothing Manufacturers' Division of The Rubber Association of America, Inc., was formed at a meeting held at the office of the United States Rubber Company, 130 Essex street, Boston, Massachusetts, on March 4, 1919, with the following officers: N. Lincoln Greene, chairman; George G. Bryant, vice-chairman; Harry S. Vorhis, secretary. EXECUTIVE COMMITTEE: N. Lincoln Greene, chairman, United States Rubber Co.; George G. Bryant, Chicago Rubber Clothing Co.; S. T. Hodgman, Hodgman Rubber Co.; William M. Tenney, Clifton Manufacturing Co.

The membership of the section is as follows: Apsley Rubber Co.; Archer Rubber Co.; Boston Woven Hose & Rubber Co.; Cambridge Rubber Co.; Chicago Rubber Clothing Co.; Clifton Manufacturing Co.; The B. F. Goodrich Co.; Hodgman Rubber Co.; United States Rubber Co.

STANDING COMMITTEES RECENTLY APPOINTED.

NOMINATING COMMITTEE.

Bertram G. Work, chairman, The B. F. Goodrich Co., New York City.

Harvey S. Firestone, Firestone Tire & Rubber Co., Akron, Ohio.

George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York.

Frederic C. Hood, Hood Rubber Co., Watertown, Massachusetts.

Henry C. Pearson, THE INDIA RUBBER WORLD, New York City.

The above are the last five past-presidents in the order named, and the Executive Committee expressed the hope that this precedent would be followed in succeeding years, as the last five past-presidents would be best qualified to nominate directors of the Association.

LEGISLATIVE COMMITTEE.

Charles Neave, chairman, general counsel, The Rubber Association of America, Inc., New York City.

F. C. Van Cleef, The B. F. Goodrich Co., New York City.

Ernest Hopkinson, United States Rubber Co., New York City.

AUDITING COMMITTEE.

Edward E. Huber, Eberhard Faber Rubber Co., chairman, Brooklyn, New York.

W. J. Kelly, Poel & Kelly, New York City.

OUTING COMMITTEE.

Francis R. Henderson, chairman, F. R. Henderson & Co., New York City.

A. A. Garthwaite, Lee Tire & Rubber Co., New York City.

L. P. MacMichael, L. P. MacMichael, New York City.

ARBITRATION COMMITTEE.[2]

Horace DeLisser, Ajax Rubber Co., Inc., New York City.

Andrew H. Brown, Meyer & Brown, New York City.

[2] Two members to serve three years to succeed those whose terms expired at the last annual meeting.

THE MID-SUMMER OUTING.

The Outing Committee held a meeting late last month and completed arrangements for a mid-summer outing of The Rubber Association to be held some time in June.

TRANSPORTATION IN SINGAPORE.

The commissioners of the municipality of Singapore have appointed a committee to report on means for improving the city system of transportation, with particular reference to the introduction of a municipal motor-transport service. The present tramway system is a private enterprise, the franchise under which it operates still having 19 years to run, but the service is already considered unsatisfactory and inadequate. In addition to the tramway route covering about 16 miles, there are operated approximately 9,000 jinrikishas and 468 hackney carriages, including over 200 motor vehicles for hire, besides 900 private jinrickshas. The tramways alone carried about 13,000,000 passengers in 1917.

RUBBER PRODUCTION IN BRITISH GUIANA DURING 1917.

The United States Commerce Reports give some interesting figures concerning rubber and balata production in British Guiana during 1917. Twenty new balata licenses were issued, making a total of 629 at the end of the year. The amount of balata produced from licensed tracts amounted to 1,291,241 pounds, as against 1,483,449 pounds in 1916. The number of laborers employed was 4,061 and the value of the balata exported amounted to $1,024,176.

On the other hand, the amount of rubber produced decreased, the amount for 1917 being 14,781 pounds, as against 15,586 pounds in 1916.

It was hoped that the early rapid growth of the Pará rubber planted in the colony would continue, but in recent years the trees have been attacked by a leaf disease which has retarded their growth and even proved fatal in some cases. It is believed, however, that this disease will be conquered and that plantation rubber will become an important article of export.

	EXPORTS.			
	1916.		1917.	
Product.	Pounds.	Value.	Pounds.	Value.
Balata	1,575,502	$848,541	1,729,057	$1,024,176
Rubber	15,586	8,289	14,781	8,349
	IMPORTS.			
Manufactured rubber goods	.....	12,229	.....	6,109

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

UNDER the direction of the Government during the last year there has been a saving of $300,000,000, it is estimated, accomplished through the reclaiming of rubber alone, and a proportionate salvage of other materials.

Ohio cities, among others all over the country, conducted campaigns in connection with Red Cross work to induce their citizens to save rubber. In Cincinnati, "Mt. Rubber" was built in Fountain Square, composed of old automobile tires, inner tubes, and rubber accessories of all kinds. The illustration shows only the nucleus of the "mountain" that was afterward piled up, but the truck was contributed tires and all, because its owners "could not get the tires off," which was duly announced by the placard on the side. The sale of the rubber thus collected netted the Red Cross more than $2,000.

In Akron, one of the big rubber companies announced in its publicity matter that it had reclaimed waste rubber and other materials to the amount of $3,000,000 during the year.

In Denver, Colorado; Baltimore, Maryland; Detroit, Michigan, and Providence, Rhode Island, among other cities, the same idea of soliciting waste rubber goods from their citizens was utilized in various campaigns, some for the benefit of the Red Cross, some for the sale of War Savings Stamps. The idea even went across the sea, the British Ministry of National Service issuing a similar appeal for the benefit of the Red Cross.

Everywhere, throughout our country, the spirit of thrift and economy developed during the war has brought about a realization of the value of so-called waste matter which was formerly thrown away when it had served its original purpose.

"COULDN'T GET TIRES OFF, SO DONATED TRUCK."

MISCELLANEOUS OHIO NOTES.

In order to meet its need for tire fabric, The Mason Tire & Rubber Co., Kent, and the Mason Brothers Co., Cleveland, have incorporated The Mason Cotton Fabrics Co. and have had plans prepared for a $3,000,000 mill to be built at Kent for spinning and weaving cotton, to have about 125,000 square feet of floor space. It will be of steel and concrete construction and will be equipped with modern machinery and apparatus so as to attain the exact degree of humidity and other conditions essential for the manufacture of raw cotton into tire fabric. The new plant will employ about 200 workmen. Both cord and flat tire fabric will be manufactured. The officers of The Mason Cotton Fabrics Co. are as follows: O. M. Mason, president; R. W. MacKinnon, vice-president; J. H. Diehl, vice-president; D. M. Mason, treasurer, and W. A. Cluff, secretary.

* * *

The Knight Tire and Rubber Co., Youngstown, Ohio, has changed its name to The Canton-Blackstone Co. This is a subsidiary of The Republic Rubber Corp.

* * *

R. J. Firestone, Akron, former vice-president of the Firestone Tire & Rubber Co., has bought the old plant of The Standard Tire & Rubber Manufacturing Co., Willoughby, Ohio, which was recently in the hands of a receiver. A new company has been organized under the name of the Standard Tire Co., with the following officers: R. J. Firestone, president; C. A. McCullouch, vice-president; E. A. Tinnsman, second vice-president and factory manager; Tom A. Palmer, secretary and treasurer.

* * *

The Acme Rubber Heel & Sole Co., Elyria, Ohio, manufacturer of fibrous heels and soles, elected the following officers at its stockholders' meeting on January 14, 1919: C. C. McDonald, president; A. J. Robson, vice-president; R. E. Griswold, secretary; H. A. Crandall, treasurer; B. W. Rote, general manager; G. Kolinski and E. M. Brush, directors in addition to the foregoing. This concern was incorporated in September, 1917, but did not actively engage in business until June, 1918. In January of the present year it opened a distributing station for "Acco" fiber products in Chicago, in charge of B. W. Elwert, at room 400, 208 North Wells street.

* * *

The Chillicothe Tire & Rubber Co., Chillicothe, Ohio, has purchased a factory building and is buying machinery for making automobile tires. The company was incorporated in 1918. The officers are: C. A. Hertenstein, president; S. S. Wortley, Jr., vice-president, and W. W. Boulger, secretary and treasurer.

* * *

A. G. Snow, Paulding, Ohio, has been appointed state registrar of automobiles for the current year, succeeding W. A. McCurdy, of Columbus. Mr. Snow is at present chief drug inspector in the drug and food department of the State Agricultural Department.

AKRON NOTES.

The B. F. Goodrich Co., Akron, Ohio, undertook to reach its former employes overseas through their relatives and families in order to let them know that as soon as they return, there are positions waiting for them in the Goodrich organization. In almost every case this plan has been successful and the soldier or sailor located.

Lieutenant C. D. Sperry, formerly in the railway sales department of The B. F. Goodrich Co., Akron, Ohio, was recently decorated at Vallender, on the Rhine, with a French war cross, for his work in the Second Division in turning back the Germans at Château-Thierry.

W. O. Rutherford, one of the vice-presidents of The B. F. Goodrich Co., Akron, Ohio, has been elected president of the Better Letters Association. H. E. Ammerman, with The Goodyear Tire & Rubber Co., Akron, is one of the directors. The organization is national in scope and aims to make business correspondence uniformly efficient by the elimination of unnecessary practices and an extensive educational campaign.

H. T. Waller, organizer of the educational system of The B. F. Goodrich Co., Akron, Ohio, has been appointed general secretary of the Akron Y. M. C. A. He will have particular charge of work in connection with young men coming into the city; broadening the Americanization program; and providing for the colored young men of Akron. During his two and one-half years in charge of the Goodrich Bureau of Education, the department has taught a working knowledge of English to more than 2,000 foreign employes. A farewell reception was given Mr. Waller in the Goodrich cafeteria on February 28. The orchestra of Department No. 2 and the Goodrich male quartet furnished music. Refreshments were served after the speeches.

THE RUBBER TRADE IN LOS ANGELES.

By Our Regular Correspondent.

REPORTS from the leading rubber firms and rubber goods distributors in this section of Southern California report that the advance rubber business is much ahead of that of last year and that large orders are being placed for goods for the fall trade. There is a strong demand all up and down the Coast for rubber boots of all kinds, and consignments from the East are coming in rapidly. The constantly growing fishing industry of Southern California makes it an especially fruitful territory for the disposal of various lines of rubber boots, although at present the canneries are inactive just prior to the big spring run of fish. Fishermen are stocking up, however.

"Southern California has always been an exceptionally good territory for the sale of sporting lines of rubber footwear," says Lou M. Simpson, in charge of the rubber clothing and footwear section of the United States Rubber Co. "The climate of Southern California throughout the winter is such as to be conducive to outdoor sports, and there is always a demand for tennis and golfing footwear, while the sportsmen who use sportsmen's rubber boots are numbered in the thousands. The first of May sees the trout season in this part of the country in full blast, and the wise sportsman prepares for it in advance, while there are two or three open months in the winter when trout fishing is allowed in and around Ventura. There is no part of the country where the demand for rubber boots is greater than here, where the market fishing industry has assumed such proportions, especially when the war created such a demand for fish. Of course, all this created a demand for rubber products. There is no reason for any pessimistic cry of hard times at present. Of course, the principal demand on the part of buyers just now is for protection, and, assured of that, they are going ahead to replenish their stock of fall goods."

* * *

George B. Clark, better known to his trade associates and intimates as "Nipples" Clark, from the plant of the Revere Rubber Co., Providence, Rhode Island, was in the city early in the month at the Hotel Alexandria. He spent a week or so among the trade explaining the merits of his line of golf balls.

* * *

J. B. McGee, manager of the United States Rubber Co. for Arizona and Southern California, spent a week in Arizona in various sections, conferring with the rubber trade. The closing of the United Verde mines in Jerome and Bisbee was a temporary setback for the spring trade, but there are good prospects for a revival with the resumption of activities.

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The United States Rubber Co. in Los Angeles is taking an extra 20,000 feet of floor space for the accommodation of its business at its local establishment.

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"The abnormal conditions precipitated by the entry of this country into the war are rapidly passing," said D. M. Bixby, local manager of The B. F. Goodrich Co., "and this is resulting in a more stable condition generally. In Southern California business is continuing good, and we are looking forward to one of the best years in the history of the local branch.

"There is nothing to support the contention of some of the pessimists that the cessation of hostilities will result in curtailment and business depression. Conditions were never so good in Southern California. The influx of tourists is at present, and has been for some time past, in the nature of a record-breaker. This has stimulated the automobile trade in all its branches.

"The great volume of business which has been side-tracked for war activities is once more flowing into its accustomed channels, and every industry is resuming its normal proportions, and getting back to a peace basis founded on a substantial and legitimate demand, but yet quickened by the necessity for supplying all the essentials of which the people of the United States have been denying themselves for so long, as well as many of the luxuries.

"Economic conditions are unquestionably adjusting themselves, but with increased foreign trade and the development all over the North American continent the prospect is encouraging rather than discouraging."

* * *

H. S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, has leased the house of the late R. A. Rowan at Pasadena. Mr. Firestone arrived here just in time to give greetings and farewell to Henry Ford, who had been here for several weeks but was just on his way East. The close friendship of Mr. Firestone with Mr. Ford has given rise to the sensational report that has been the subject of endless discussion in the East that the tire magnate will be associated with the Detroit man in the production of the new $250 automobile which Mr. Ford announced while here he intended to put on the market in a year from now to compete with his own noted vehicle.

Mr. Firestone made his first visit to Los Angeles in 1906, when he established a branch house here which was one of the first to be located on the Coast. His visit at this time is to make a thorough study of the commercial possibilities of this part of the country with the view of extending his business interests here and perhaps for the establishment of a branch factory. The local branch of his company in Los Angeles is under the direct management of his brother, E. S. Firestone.

Mr. Firestone declares that rubber is destined to be one of the chief industries of the United States in the near future. Now that most of the rubber plantations of the world are in the Orient, Mr. Firestone maintains that the logical course of this branch of commerce is through Pacific ports. It is his belief that many of the large Eastern concerns which buy through the London markets will in time divert the product through Western channels. He declares that the growth of the rubber industry on the Coast will naturally be followed by the establishment of large factories, as the accessibility of the Coast cities to the rubber plantations will be a great inducement to tire manufacturers to locate here. Mr. Firestone is confident that the automobile industry is only in its infancy, and that shipping by trucks will be the favorite means of future transportation.

Rubber, he predicts, will be cheaper, as will automobiles, just as soon as things are adjusted to a peace basis. He paid a particular tribute to the magnificent road system of California, which is the greatest asset to the development of the automobile business.

"The automobile has done almost as much to develop the country as have the railroads," concluded Mr. Firestone, "and if the industry continues to grow as it has done in the past, the result will be greater than can be dreamed of at present."

* * *

Among the leaders in the rubber trade who have visited the Pacific Coast this winter, some of them to stay for months, are Colonel Samuel P. Colt and Charles B. Seger, of the United States Rubber Co.; Harvey E. Firestone, of the Firestone Tire & Rubber Co.; Joseph O. Stokes, president of the Thermoid Rubber Co., and Frank A. Seiberling, of The Goodyear Tire & Rubber Co.

* * *

At a dinner given to Harvey S. Firestone by the Los Angeles Chamber of Commerce, the guest uttered the following partpromise: "Your Imperial Valley cotton is the best in the world, and as 75 per cent of the rubber coming into the United States is now being brought through the Pacific Coast ports, there is no reason why, if you build the cotton mills and the rubber plants, we should not make tires here."

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

BOSTON'S automobile show, held last month, was pronounced the most successful that ever occurred in this city, both in the attendance and in the number of cars exhibited. However, there were but few tires shown and not many exhibits of accessories specially interesting to the rubber trade. In many cases, such goods were shown not as exclusive exhibits by their manufacturers, but as units of stock of local general automobile supply dealers.

Among the many patching outfits and vulcanizing devices, there was included the Sepco vulcanizer, in which the heat is obtained by electric current, for which are claimed a number of points of superiority. Among the anti-puncture devices might be mentioned the Auto-Seal inner tube, manufactured by the Shaw Tire Co., Inc., Boston, and the Coffield tire protector, made by the Coffield Tire Protector Co., Dayton, Ohio.

The business of retreading tires is becoming important, and the Wakefield Tire Co., Wakefield, Massachusetts, had a fine exhibit of rebuilt and retreated tires. Another exhibit was that of the American Retreading Corp., Chelsea, Massachusetts.

Among other exhibitors known to the readers of THE INDIA RUBBER WORLD might be mentioned the Boston Blacking Co., whose cements and tire paints call for crude rubber in the making. The Westinghouse air spring was on exhibition. The Joseph Dixon Crucible Co., Jersey City, New Jersey, showed a line of its graphite lubricants. The Sewell Cushion Wheel Co. exhibited its specialty. The United States Rubber Co. had a general line of accessories, and the L. C. Chase Co. had a beautiful exhibit of its automobile and carriage cloth, as well as other specialties less related to the rubber industry. In the Willard storage battery exhibit was shown the component parts of that battery, including the threaded rubber insulators which make an important part of its construction.

* * *

The Monatiquot Rubber Works Co., the well-known reclaimer of South Braintree, Massachusetts, will celebrate its tenth year of manufacturing on April 19.

This company's success has been due to the employment of a reclaiming method having features of special value in the processing of automobile tires. It claims to have been the first firm to grade the different makes and qualities of old tires, thereby guarding the uniformity and quality of the output.

It is an interesting fact that the original organization of 1909 remains practically unchanged in its personnel. Robert C. Harlow is president and factory manager; James H. Stedman, treasurer; Merton A. Turner, sales manager; Benjamin Ayer, production superintendent; M. H. Pingree, chief chemist.

* * *

The Hipco Manufacturing Co., Boston, has been incorporated with a capital stock of $50,000 for manufacturing a number of automobile specialties, among them a running board mat of special rubber composition reinforced with a strip of fabric for waterproofing purposes, and adapted to cause the mat to lie flat and tight when fastened in place by bolts or screws running through copper-plated washers embedded in the rubber. The officers of the company are Thomas A. Glennon, president; Frederick J. Gleason, treasurer; and William E. Fleet, clerk. The directors are Elizabeth Gleason, James F. Guilhop and Charles Prinkworth.

* * *

At the annual meeting of the board of directors of the Franklin Rubber Co., held early last month, C. T. Small, one of the founders of the business in 1882, resigned the presidency because of impaired health. Asa C. Merrill was elected to fill the vacancy. Mr. Merrill has been connected with the rubber trade more than thirty years, having learned the business at the old Alfred Hale store on School street, associating himself with the Franklin Rubber Co. nineteen years ago. Everett L. Fuller was reelected treasurer. He is the senior of the old firm of Fuller, Leonard & Small, the predecessors of the Franklin Rubber Co. Linn L. Fuller, who was elected assistant treasurer, joined the company in 1907, but two years afterward entered the garage business, returning to the Franklin Rubber Co. in 1917 to take charge of the automobile department. The company is in a flourishing condition, and its store premises modern and in every way greatly improved by its reconstruction and renovations, following the fire damage of a few months ago.

* * *

The Converse Rubber Shoe Co., Malden, Massachusetts, is expanding. An addition, 40 by 80 feet, is being erected adjoining the main factory, which when finished will be occupied as the business offices, thus giving additional room in the factory building. The addition is of the same construction and design as the factory, and is so planned that further stories can be added when more room is needed.

M. M. Converse, president and manager of the company, at this writing is in Europe taking the opportunity to enjoy a brief respite from business. His youngest son accompanies him.

* * *

Americanization is progressing, hereabouts. One day last month eight automobiles containing 46 aliens, the greater part of them employed by the Converse Rubber Shoe Co., Malden, and all members of the Americanization classes of the Central Evening High School in that city, arrived at the Federal Building in Boston, and applied for their first citizenship papers. The evening before, they were given a lecture on the uses of the public library and then later were taken to police headquarters, where they were shown the rudiments of city government. During the time they have attended school they have been paid twenty-five cents an hour by their employers, who have been instrumental in their taking this step towards becoming citizens of the United States.

* * *

Frederic C. Hood, of the Hood Rubber Co., presided at a meeting and luncheon of the Associated Industries of Massachusetts, of which he is president, when 300 members gathered at Worcester, Massachusetts, March 4, to consider transportation and legislative matters. This association endeavors to render three distinct lines of service: first, service to the individual members of the association; secondly, services which are of value to manufacturers as a class; and thirdly, it endeavors to render service of a broader nature, which may be called perhaps community service; finally, the association is also interested in lessening the delay and cost of appeals from the decisions of the industrial accident board.

* * *

George W. Chase, one of the oldest workers in the Edgeworth factory of the Boston Rubber Shoe Co., Malden, died at his home in that city, March 7, aged 61 years. He entered the employ of this company 41 years ago, and for many years was a department foreman.

* * *

President B. T. Martin, of Everlastik, Inc., Boston, left recently for a trip to the Pacific Coast and will probably be gone until the early part of April.

* * *

The Hazen-Brown Co., manufacturers of rubber cements, has removed its business offices from Brockton to 727 Atlantic avenue, Boston, Massachusetts.

The rubber-cement factory of the Hazen-Brown Co., at Brockton, was threatened with destruction last month when a friction spark from the main belt ignited some gasoline which was being used by a woman employe. Unmindful of her own danger, she fought to extinguish the flames, and her efforts are said to have saved the factory, though she was severely burned about the head and body.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

THE Trenton rubber manufacturers are experiencing a slump in business at the present time, due to the after-effects of the world war. At first the tire and tube business remained good when the other departments began to show signs of slackening, but now the former departments are beginning to be affected. Rubber company officials are optimistic over the future, however, and say that when matters have become readjusted business will remain prosperous for years to come. Two Trenton rubber manufacturers are anxious to build additions to their plants and are awaiting a drop in the cost of materials before they start operations.

* * *

The India Rubber Co., New Brunswick, conducted a St. Patrick's social on March 17 at the New Brunswick club. R. S. Butler, of the United States Rubber Co., New York City, gave an address on "Organization and Management."

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The United States Rubber Co., New Brunswick, has posted notices in its plant to the effect that hereafter the works will be operated only five days a week and that there will be no work on Saturdays. It is understood that the curtailment is due to the unprecedented weather conditions and that orders for rubber footwear have fallen off to a great extent.

* * *

Trenton rubber manufacturers are benefiting by the better shipping facilities and the cheaper rates of transportation due to the establishment of the new municipal dock along the Delaware River in South Trenton. The dock was recently opened and the Joseph Stokes, Thermoid, and Essex Rubber companies were the first Trenton rubber concerns to ship goods on the opening day.

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The Joseph Stokes Rubber Co. has asked the Trenton City Commission for permission to construct an additional railroad spur track from its plant across Assanpink Park, which is owned by the city. The company desires better railroad facilities.

* * *

More than four hundred employes of the Thermoid Rubber Co. Beneficial Association recently held a banquet at the Hotel Hamilton with the young women of the office force as guests. Following the dinner, dancing was enjoyed. R. F. Lee, Jr., was the toastmaster.

* * *

Fire on March 19 caused a loss of $20,000 at the plant of the Empire Rubber & Tire Corp. The blaze started among cotton fabric and spread to the cotton hose department on the third floor. Much of the damage was caused by water. A quantity of rubber stock was burned, but the building was little damaged. The sprinkler system at the plant saved the building from destruction.

* * *

The United & Globe Rubber Manufacturing Cos. have filed a certificate in the office of the Secretary of State showing that at a recent meeting of the stockholders it was decided to amend the certificate of incorporation by changing the name to the United & Globe Rubber Co. It was also stated in the certificate that there are 2,457 shares of stock issued and outstanding.

* * *

The Howe Rubber Co., of New Brunswick, is building a two-story addition, 76 by 105 feet, to cost $30,000. Approximately one-half of this building will be used for manufacturing purposes and the balance for new executive offices. The company is also building a one-story warehouse, 200 by 40 feet.

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Almus E. Vinton has been appointed sales manager of the New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey.

* * *

F. F. Fox, Trenton, New Jersey, has been appointed New Jersey representative of the Monatiquot Rubber Works Co., South Braintree, Massachusetts.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

NOW that the top-speed rush of the Rhode Island rubber manufacturing plants on contracts and sub-contracts for the Government and the Allies is practically over, all the concerns are now looking to orders on regular goods that have been given scant attention during all these months. A majority of the firms are taking advantage of this opportunity to overhaul the machinery, and to make necessary repairs and improvements. Because of this the plants have recently been closed in part or in whole for periods varying from a couple of days to a week.

About the middle of the month a five-day-a-week schedule was put into operation at the factory of the National India Rubber Co. at Bristol. The rubber goods on hand, it was stated, warranted a curtailment of the production, at least for the time being, although there are 4,500 hands working full time each day except Saturdays.

* * *

The American Wringer Co.'s adjourned annual corporate meeting, held last month at the office in the Grosvenor building, Providence, was presided over by Walter S. Ballou, president. The reports of the treasurer and secretary were read and accepted and the president gave a résumé of the past year's work, stating that the outlook for the next year is particularly bright. The directors for the ensuing year were elected as follows: Walter S. Ballou, Lyman Mills, A. J. Beardsley, J. F. Hemingway, R. J. B. Sullivan, Latimer W. Ballou and J. F. Fletcher, the latter being elected treasurer. The gross earnings of the company for the year 1918 were $121,760; the expenses were $106,834.41, and the net, $14,925.92, but this was absorbed by the Government taxes of $13,113.55 and a depreciation charge of $1,812.37.

* * *

Extensive alterations, additions and repairs are being made at the plant of the Washburn Wire Co., Phillipsdale, East Providence. The entire plant will be completely overhauled by sections so as not to interfere with the operations of the concern.

* * *

The plant of the National India Rubber Co., at Bristol will undergo a general overhauling and renovation calculated to improve and increase the capacity of the various departments. The management's intention of continuing the general plan of increased efficiency, as well as the educational and physical welfare of the employes is shown by the recent formation of the National India Rubber Co. Foreman Club, which includes in its membership several hundred of the foremen, forewomen, and other officials of the factory force.

At the organization meeting Ralph S. Butler, of the commercial research section of the United States Rubber Co., New York, delivered an instructive address on "The Development of Team-Work," and his remarks were supplemented by Arthur Reeves, supervisor of production, vice-president George Schlosser and assistant superintendent Edwin I. Cooper. The following officers were elected: James W. Franklin, president; Miss Mary Reynolds, vice-president; Edward E. Bunn, secretary; George McClure, treasurer; directors for three years, George Schlosser and Miss Mary Connery; for two years, F. L. Dunbar, Douglas Morey, and Miss Bride Curley; for one year, T. E. Johnson, M. C. Smith, Jr., R. W. Holt, J. A. Wahlgren, Peter Vaccaro, Manuel Andrade, Miss Sadie Congdon, and Miss Mary Angello.

The day nursery, located at the corner of High and Bourn streets, which was organized by the management for children of the employes of the company, is ready for service and is certain to be of inestimable benefit to the workers. The rooms are finely furnished for the purpose and an isolation room provided where children affected with contagious sickness may be cared for. Mrs. John F. Reynolds is the matron.

The National India Rubber Co., Bristol, is fitting up a dental parlor for the benefit of its employes.

Miss Ruth Graham, formerly a nurse at the National factory, but now in the Navy, and recently returned from Queenstown, Ireland, where she was with a base hospital unit, has been at Bristol on a leave of absence with her parents.

* * *

One of the many Providence concerns which played an important part in the production of war material was the Revere Rubber Co., a subsidiary of the United States Rubber Co. Thousands of balloons were turned out at the plant of this concern on Valley street, Providence, for use in dropping bundles of printed matter behind the German lines. These balloons, which were the result of tests carried on at the balloon school at Fort Omaha, Nebraska, under authority of General Churchill, commanding the Military Intelligence Section, were from six to nine inches in diameter when inflated, and were made of pure rubber of the transparent sort used in rubber gloves. When Uncle Sam had a message for the Boches in the front lines, he sent up one of these little balloons on a string. When it had reached the desired location a parachute was released by a pull of the string, and the propaganda thus distributed.

The plant of the Revere Rubber Co., Providence, is the scene of an unusual amount of improvement, either actively under way or to be commenced in the immediate future. This includes a new one-story boiler house of brick, 90 by 50 feet, for which the contract was awarded the past month. The contract for a new transforming house has also been recently awarded and work thereon has already commenced.

* * *

The United States Rubber Co. has recently acquired a considerable tract of land on Kinsley avenue, Providence, located near the plant of the Nicholson File Co., containing approximately 43,000 square feet. Approximately $60,000 changed hands on the transaction.

* * *

Joseph Mawson, John Broadbent and Thomas Swain, have formed a copartnership as M. B. S. Company, located at 9-11 Winter street, Providence. They will carry Hartford and Alco bicycle tires.

* * *

The Kelly-Springfield Tire Co., which recently opened warerooms at 143 Broad street, Providence, has leased the premises from the estate of B. B. Lederer for a period of five years.

* * *

The Park Vulcanizing Co., 1198 Broad street, Providence, is being conducted by Edward N. Sheffers, according to information filed at the city clerk's office.

* * *

The Goodyear Raincoat Co. has opened a fine large retail store at 425 Westminster street, corner of Union street, in one of the best locations in the downtown shopping section.

* * *

The National Rubber Co., 36 Franklin street, Providence, is owned by Mildred E. Willis, according to her statement placed on file at the office of city clerk.

* * *

The Broadway Vulcanizing Co., 31 Broadway, Pawtucket, is owned by Josephine C. Lee, according to the returns filed at the city clerk's office.

CANADIAN NOTES.

A LARGE and representative meeting of rubber shoe manufacturers and distributers was held on February 19, 1919, at the Windsor Hotel, Montreal, Quebec. T. H. Rieder, of the Dominion Rubber System, was chairman and R. H. Greene, of Gutta Percha & Rubber, Limited, secretary. The topics discussed included methods of sale, cash terms, datings and prices of different lines, bonuses, and the formation of jobbers' associations in various provinces where none at present exist. A committee was appointed to take charge of this last matter and arrange for forming such organizations in the Maritime provinces, Ontario, and Quebec. After the meeting, the guests were given a luncheon by the local members, at which interesting speeches were made by Colonel Massie, J. A. Connor, W. H. Alderson, R. B. Griffith, and others.

Among those who attended the recent third annual banquet of the Toronto Shoe Repairers' Association, at the Carl's Rite Hotel, were the following: Messrs. Thompson, Rogerson, and Thompson, representing the Dunlop Rubber Goods & Tire Co., Limited; Messrs. Harris, Johnston, Stewart, and Williams, representing The Goodyear Tire & Rubber Co. of Canada, Limited; and Messrs. Jeffrey, Mahaffy, and Wilson, representing the I. T. S. Rubber Heel Co., Limited.

The National Motor Show of Eastern Canada is to be held at the Victoria Rink, Montreal, Quebec, April 5-12, 1919. T. C. Kirby is manager.

The Canadian trade press reports the formation of the Canadian Trade Commission at Ottawa, Ontario, for the purpose of assisting in the maintenance and development of trade relations with foreign countries. Sir Charles B. Gordon is chairman, but will continue to act as chairman of the British War Mission, as he has done during the last two years; C. B. McNaught and H. W. Thomson will carry on the business in Ottawa. The Commission will keep in close touch with the Canadian Mission in London under Lloyd Harris.

The Van der Linde Rubber Co., Limited, Toronto, Ontario, is reported to have announced that it is anxious to give every possible preference to returned soldiers seeking positions.

The F. E. Partridge Rubber Co., Limited, Guelph, Ontario, is beginning the construction of a four-story addition to its plant, to be 100 by 65 feet, of reinforced concrete. It plans to use some of the space thus afforded, for the manufacture of cord tires on which it has been experimenting for some time. The Partridge company will also build soon a factory for the manufacture of rubber footwear. This unit also will be four stories high, 200 by 80 feet.

The Columbus Rubber Co. of Montreal, Limited, Montreal, Quebec, has appointed Emile Larose sales manager. Mr. Larose was formerly with the Canadian Footwear Co. in a similar position.

The Columbus Rubber Co. of Montreal, Limited, has designated as its Montreal branch the warehouse which it has recently taken over at 1464 St. Catherine street, East. It will maintain its sales offices in this building and ship to all customers and jobbers in Eastern Canada from this office.

Paul E. Lefebvre has been appointed manager of the Montreal branch of the above company, and A. D. Porcheron, acting manager of the Ottawa, Ontario, branch, succeeding R. Gratton, resigned.

The Kaufman Rubber Co., Limited, Kitchener, Ontario, intends to build a six-story reinforced concrete addition to its factory, 160 by 80 feet, as soon as building material can be obtained at prices nearer normal. The manufacturing capacity of the company will then be considerably increased and permit the use of more rubber machinery. This concern makes "Lifebuoy" rubber footwear.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE annual meeting of the India Rubber Manufacturers' Association, held in Manchester at the end of January, was noticeable for the large attendance representative of the trade, several former outstanding firms of importance being now within the pale. The chairman, J. T. Goudie, presided and his survey of the past year's proceedings and his administrations of those to come were couched in equally optimistic tones. He quoted high official opinion to the effect that their association was recognized as one of the best equipped and progressive organizations in the country. Referring to the Government Rubber Control Committee, on which they were represented by Stewart A. Russell, of The Silvertown Company, he said that the committee was still retained by the Government in a purely advisory capacity though it seemed very improbable that any control would now be exercised over the imports of raw rubber.

The interesting announcement was made of the formation of a Reclaimed Rubber Manufacturers' Association, thus necessitating an amendment in the articles of association. Not having any special information, I do not know whether membership will be limited to reclaimers or whether those who do reclaiming as a part of a general substitute and rubber chemical business will be eligible. Since the introduction of American capital and American methods into the reclaiming industry of Britain, the business has, of course, assumed a more important position than it held twenty years ago and its products are not now referred to with bated breath in the trade. Another point is that its existence as an important industry has become known to government departments now that the country has so much discarded rubber on which it wants to realize at full value.

The association has now became associated with the Federation of British Industries and a special sub-committee has compiled a voluminuous report on the rubber trade for the information of the Government. A topic of interest touched upon by the chairman was the government-aided association for industrial research in the rubber trade, the formation of which was in an advanced stage. Naturally there are not wanting among ordinary tax-payers connected with the various industries to be assisted those who view with some alarm the numerous raids made upon our depleted exchequer, and it is therefore in the first degree imperative that the various research associations should be conducted on lines conducive to the general welfare.

With regard to the formal business of the meeting Mr. Goudie was somewhat against his inclination reelected chairman for the fifth year in succession, a glowing tribute to his sterling qualities. The following men were elected members of the General Committee, a much larger body than was the case only a few years ago, due to the formation of sectional committees which nominate one or more of their members to serve on the general committee:

F. C. Baisley, The Dunlop Rubber Co., Limited, Birmingham; P. A. Birley, Chas. Macintosh & Co., Limited, Manchester; J. H. C. Brooking, St. Helens Cable & Rubber Co., Limited, Warrington; A. Cairns, A. Cairns & Co., Glasgow; H. C. Coles, Wm. Warne & Co., Limited, Tottenham, London; R. Eccles, F. R. Reddaway & Co., Limited, Manchester; Col. J. Gardiner, The Rubber Co. of Scotland, Limited, Stirling; J. T. Goudie, Leyland & Birmingham Rubber Co., Limited, Leyland; E. Healey, W. A. Bates, Limited, Leicester; A. D. Ingram, J. G. Ingram & Son, Limited, Hackney Wick, London; Alexander Johnston, The North British Rubber Co., Limited, Edinburgh; Sir G. C. Mandleberg, J. Mandleberg Co., Limited, Manchester; David Moseley, David Moseley & Sons, Limited, Manchester; C. R. Inartley, George Spencer Moulton & Co., Limited, Bradford-on-Avon; T. C. Redfern, Redfern's Rubber Works, Limited, Hyde; Stuart A. Russell, The Silvertown Company, London; G. Spencer, Monarch Waterproof Co., Limited, Manchester; H. Standring, I. Frankenburg & Sons, Limited, Manchester; James Tinto, The Irwell & Eastern Rubber Co., Limited, Manchester; F. Webster, The Avon Rubber Co., Limited, Melksham; W. Wotherspoon, James Wotherspoon & Sons, Glasgow.

The secretary of the Association is W. G. Wilson, 16 Deansgate, Manchester.

DUNLOP RUBBER CO., LIMITED.

This concern continues to show increased strength and prosperity with a profit of £959,503 for 1917-18, against £435,100 for the preceding year, the ordinary dividend being raised from 15 to 23¾ per cent. What, with rubber plantations and cotton mills and the incidents of the excess profits duty, the accounts are not particularly easy to follow or to compare with former years, so only a few lines of reference will be made here. The rubber estates are valued at £977,100, the planted area being 34,000 acres. The profits from this source and also from the cotton mills in Lancashire, of course, go some way to explain the net profits of the company, having almost doubled in a year of war trading.

XYLOS RUBBER CO., LIMITED.

An acceptable New Year's gift was received by the customers of this company in the form of a leather pocket wallet and detachable-leaf notebook combined. Some useful tables relating to specific gravities of compounding materials, properties of steam, etc., find inclusion, as well as a brief account of the company and its activities. From the information given it appears that the company was formed in 1913 for the purpose of reclaiming vulcanized rubber by a patented process, and judging by the clientele it has obtained in four years' business, its progress has been by no means slow. The management is in the hands of an experienced directorate, of which Marshall Stevens, M. P., is chairman, and Edwin L. Curbichley managing director. The works are situated in Trafford Park, the flourishing industrial suburb of Manchester, Mr. Stevens being the chairman of the Trafford Park Estates Co., Limited. The Xylos company claims that its special process gives marked advantages in the production of reclaimed rubber in black, white, and red colors for use in various branches of rubber manufacture. The process yields a soluble material which can be used with or without the addition of crude rubber-filling ingredients, etc., and which require only a percentage of sulphur to vulcanize into commercial articles of soft vulcanized rubber. Great attention is paid to elimination of all traces of metal and to keeping up uniform standards of value, matters of the first importance in a business whose products go not only to home consumers, but also to our overseas dominions and foreign countries.

SOCIETY OF CHEMICAL INDUSTRY REPORTS.

A bound volume is now issued annually by the Society showing the recent progress made in official chemistry in various branches of industry. As was the case in the volume for 1916, the chapter on rubber in the volume for 1917, which is now before me, is written by H. P. Stevens. Those in the manufacture who have had time to keep in touch with current literature in the trade journals and scientific publications will not find anything novel in Dr. Stevens' summary, though they cannot fail to find it very convenient as a reminder and a reference. Dr. Stevens, of course, is well known as an able experimenter and as a leading authority on plantation rubber, and it is this ground which is covered by his compilation. It seems somewhat doubtful whether chemistry, which has not got beyond the laboratory and

the scientific journal, is really entitled to be called applied chemistry. Perhaps, however, it may be argued that it is entitled to be called applied even in the embryonic stage while awaiting the stage at which the applier comes forward with confidence. With regard to vulcanization, it is remarked that from various published papers it appears that there is no standard state of cure in manufacturing practice. When adjusting the condition of vulcanization time, heat, percentage of sulphur, accelerators, etc., the manufacturer has in mind the ultimate purpose for which the goods are required. There is, therefore, in practice no one optimum cure, but rather an optimum cure for each individual article. This expression of opinion will, I feel sure, be generally endorsed in the trade. It is stated that as regards vulcanization with niter-aromatic derivatives and organic peroxides it would appear that so far the results obtained are not comparable with a fully vulcanized rubber manufactured with sulphur as the vulcanizing agent. I do not suppose that this statement will cause much perturbation in the trade, as all work of importance lately has been done to strict government specifications which enjoin the use of sulphur. Items of progress which might fitly have found mention are the greatly extended use, both in America and Great Britain, of carbon black in the manufacture of solid goods and the fact that such black is now used in a dustless form which greatly facilitates its employment. The replacement of lime by magnesium oxide as a mineral accelerator, the substitution of zinc oxide by lithopone, and the recognition by government departments that there is no gain in buying an expensive rubber if a cheap one will answer the purpose equally as well, are other items of progress that seem to call for mention in a review of 1917.

MACINTOSH CABLE CO., LIMITED.

An amalgamation has been effected between William Rickard, Limited, electric cable manufacturer of Derby, and Macintosh Cable Co., Limited, of Rice Lane, Walton, Liverpool. The title of the new firm is the Macintosh Cable Co., Limited, with registered offices at Ashbourne Road Mills, Derby. Rubber and bitumen cables will be made at Derby, and paper-insulated, low-tension and extra high-tension cables at the Liverpool works. There is nothing very startling about this combination, as Chas. Macintosh & Co., Limited, had a business arrangement with Mr. Rickard for many years prior to taking over the two Liverpool rubber works for specializing in insulation and rubber boots and galoshes.

TRADE NOTES.

The retail shops seem rather anxious to get rid of their stocks in view of lower prices becoming general, though the importance to the purchaser of the reduced prices ticketed on the goods is more apparent than real. Thus, the label on a mackintosh shows the usual price to be 45 shillings; sale price, 30 shillings, or even lower, as the case may be. The usual price, however, is merely the fancy price that the dealer hoped to get out of a long-suffering public and does not represent any genuine business value. Although in the waterproofing line prices are bound to come down, and indeed have come down, these are retarded by the position of cloth. Cotton cloth is certainly down in view of the expected increased supplies of the raw material from America, but there has been no reduction affecting the cotton and wool which are so largely used in the waterproof garment trade; the price of these, in fact has gone up.

The further rise of 10 per cent in the price of pneumatic tires on top of the 10 per cent of last year is presumably due largely to the fabric, though it has been received with a good deal of grumbling among motorists.

A branch of the industry which has suffered eclipse during the war is that dealing with sports' requisites. Now that our national games are getting into full swing again, and the rubber works are no longer barred from putting labor onto non-essentials, this branch is becoming active again.

Somewhat late in the season galoshes, which have been very scarce, are now appearing in the retailers' windows again. Under existing conditions our home producers have a more extended opportunity of doing business than they have had in the past and no doubt the six firms in the Rubber Shoe Manufacturers' Association will take full advantage of the situation. The chairman of this association is Alexander Johnston, of the North British Rubber Co., Limited, and in the course of a letter to the press correcting some misstatements which had gained publicity, he said that one firm alone in Britain was able to turn out 30,000 pairs of rubber shoes, boots, etc., per day. Presumably this is his own firm. The figure seems a huge one, though I believe it is exceeded by more than one American firm.

RUBBER GOODS IMPORTED INTO SOUTH AFRICA.

International competition for the South African market for all kinds of imported products has undergone remarkable changes since the middle of 1914. The following table shows how these changes affect the importation of manufactured rubber goods:

Country.	1913.	1917.
United Kingdom	£29,125[1]	£321,700
United States	2,760	151,843
Germany	2,648	.....
France	.....	37,379
Italy	.....	57,882
Totals, all countries	£34,533	£568,804

[1] £1 equals $4.8665 United States currency.

STRAITS SETTLEMENTS IMPORTS AND EXPORTS.

Reports of trade conditions in the Straits Settlements for the year 1917 show that, in spite of the war and the resulting limitations, the trade of the colony has increased yearly. This is attributed chiefly to the rubber industry which is the principal one in British Malaya, Singapore being today the world's greatest crude-rubber market. Other causes for good business are the favorable transportation facilities by the Pacific route and the demand in the United States and other countries for British Malayan products, in which rubber leads.

IMPORTS.

	1916.		1917.	
UNMANUFACTURED—	POUNDS.	VALUE.	POUNDS.	VALUE.
Inferior gutta	28,125,440	$936,107	18,383,680	$692,341
Gutta percha	2,074,240	354,250	3,214,400	645,005
Pará rubber	18,144,000	7,981,067	21,884,800	9,955,706
Totals	48,343,680	$9,271,424	43,482,880	$11,293,052
MANUFACTURED—				
Rubber goods and tires	.....	1,149,435	.....	1,061,528
Totals	48,343,680	$10,420,859	43,482,880	$12,354,580

EXPORTS.

	1916.		1917.	
UNMANUFACTURED—	POUNDS.	VALUE.	POUNDS.	VALUE.
Inferior gutta	22,090,880	$822,021	11,668,160	$432,766
Gutta percha	5,771,480	840,191	8,783,040	1,557,328
Pará rubber	132,867,840	74,308,447	216,366,080	118,447,759
Totals	160,730,200	$75,970,659	236,817,280	$120,437,853

EXPORTS TO THE UNITED STATES.

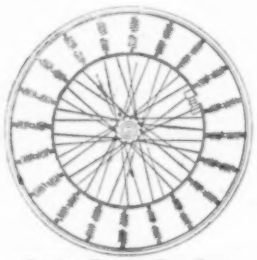
	1916.		1917.	
FROM SINGAPORE—	POUNDS.	VALUE.	POUNDS.	VALUE.
Jelutong	20,855,126	$1,001,078	10,108,209	$871,969
Gutta percha	498,246	89,825	2,212,719	281,940
Gutta jankar	.....	.....	45,733	5,398
Gutta siak	1,198,047	126,171	2,346,405	314,286
Gutta, untreated	.....	.....	764,169	51,950
Gutta, reboiled	280,416	36,241	304,659	30,008
Rubber:				
Borneo	11,588	1,855	.....	.....
Pará	92,332,048	51,322,061	167,742,830	87,232,774
Totals	115,175,471	$52,577,231	183,524,724	$88,788,325
FROM PENANG—				
Plantation rubber	9,909,738	$5,645,857	25,474,672	$14,103,936
Totals, all sources	125,085,209	$8,223,088	208,999,396	$102,892,261

It is predicted that the Straits Settlements will offer, after the war, an excellent market for industrial machinery, building materials, motor cars, trucks, and accessories, cotton goods, telephone and telegraph materials, boots and shoes, etc. Factors of importance in both the retention and expansion of this trade are good organization, personal representation in the field, and individual and continuous effort.

GERMAN SUBSTITUTES FOR RUBBER TIRES.

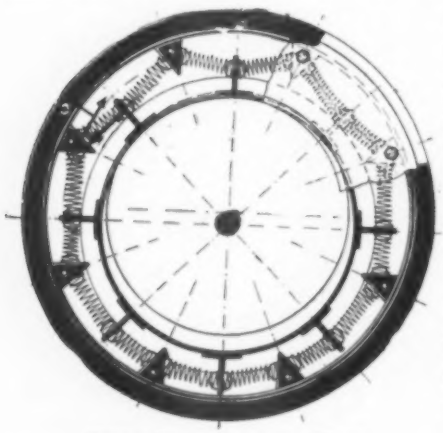
BEFORE the war English, French and Americans were the inventors of and experimentors with spring wheels. When rubber became scarce in Germany, however, Teutonic imitative genius attempted to work out substitutes for both solid and pneumatic tires. Many types were produced, but of them all none were anywhere near the equal of the rubber tire. A European correspondent of The B. F. Goodrich Co., who has studied German spring wheels on the Western front, groups them as follows:

German Double Rim Compensating Spring Suspension Wheel.



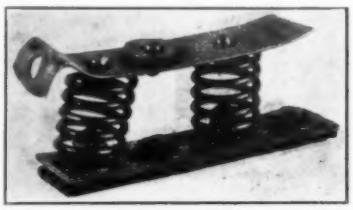
German Double Rim Spiral Suspension Wheel.

Group 1: (a) The spring wheel uses spiral springs wound from square steel and mounted radially in one or two rows between cups secured to the inner and outer wheels. There is a risk of the springs being displaced when running over obstacles or round corners, particularly, at more than moderate speed. (b) The Moll wheel is of similar construction, except that side plates are used to protect the springs from dirt, and telescopic tubes are used inside the springs to prevent lateral displacement. These tubes are extended as spherical end caps, which give the requisite degree of transverse flexibility. (c) The Fruth wheel uses a series of oval springs placed on their sides in troughs attached to the outer and inner rims. Bolts through the troughs pass through the overlapping loops of consecutive springs. The wheel is rather less flexible radially, since the springs are compressed in the plane of their winding instead of axially. One of the troughs slides in the other, and so takes up transverse forces. The construction provides circumferential flexibility against accelerating and braking forces. The whole can be mounted as a unit in place of a rubber tire. (d) The Sievert wheel retains rubber or similar material for elasticity and uses a wood road rim. A rubber ring is held on each side of the felloes by through-bolts, which also secure steel side rings carrying the outer wood rim clear of the inner wheel. All wear comes on the wood rim, and the only connection between this and the inner wheel is through the rubber side rings. These are rather flexible and liable to side-slip. Group 2: (a) The Siemens and Halske wheel uses radially mounted spiral springs (imperfectly protected against dirt and transverse forces) and a flexible outer rim. The outer rim is built up from strip steel wound to form a hoop. (b) The Flohr wheel is similar save that the outer rim has steel links (resembling link belting), the pins of which serve also to carry cups for the radial springs. The rim pins are exposed to dirt and moisture.



German Spring Suspension Wheel.

The section of a steel spring tire, shown herewith, was used on a German vehicle belonging to the personal messenger and bodyguard of Prince Eitel Friederick of Bavaria, and was sent to The B. F. Goodrich Rubber Co. by one of its former truck-tire salesmen, Captain August Barth, who is serving in France with the 303rd repair unit of the Motor Transport Corps of the Army.



Section of German Spring Tire Used in the War.

In this tire spiral springs were mounted radially on the rim of the wheel and the tread comprised three plies of springs steel to which was bolted a heavy strip of leather. The tire was fairly satisfactory when the roads were good and the rate of speed moderate, but was practically useless when excessive speeds were called for, because the radially mounted spiral springs became easily misplaced when turning corners or when obstacles were encountered.

BARCELONA FIRM INCORPORATES.

On the first of October, 1918, the well-known firm of Tusell Brothers, rubber manufacturers, Barcelona, Spain, was dissolved and a new company incorporated, which will henceforth conduct its business as: Fabricas Reunidas de Caucho y Apósitos Sociedad Anónima. The new concern will continue to make mechanical rubber goods, hard rubber goods, druggists' and surgical sundries and sporting goods. The products of this company are sold under the trade marks: "La Hermana" and "Caracol." The officers of the company are: Matias Tusell, president; M. Alántara Gusart, treasurer; Juan Inglés, secretary; Jairer Tusell, manager.

FOR BETTER AFRICAN RUBBER.

The Colonial Institute of Marseilles has just sent G. Van Pelt, Chief of its Rubber Service, on a mission to West Africa, with the object of establishing at the place of production a program of research to be carried out in connection with technical experiments which the Institute will make to determine the best methods for preparing African rubber.

Mr. Van Pelt will investigate particularly the cleaning of the raw rubber in order to determine whether this should be undertaken at the places of production or in the ports of shipping, or whether it is necessary to rely on the central installations established in France at the ports of entry. Mr. Van Pelt has carried with him the machinery necessary for these experiments and before his departure he completed a series of preliminary studies at the laboratories of the Institute, covering the principal objects of his investigations. The expense of this mission is borne by the Compagnie Française de l'Afrique Occidentale and the Compagnie Commerciale de l'Ouest Africain.

A PORT FOR SUMATRA'S EAST COAST.

Work will be started early this year at Belemar, on the East Coast of Sumatra, near Medan, to construct a harbor for ocean steamers drawing 30 feet, to be completed within three years, at a cost of $4,000,000. It is estimated that shipments from this port will amount to about 125,000 tons a year, some 35,000 tons of which are expected to be rubber.

Recent Patents Relating to Rubber.

THE UNITED STATES.

JANUARY 14, 1919.

No. 1,290,873. Detachable rim for tires. F. W. Baker and J. S. Foley, Stourbridge, Eng.

1,290,889. Demountable rim for tires. H. Bretscher, New York City, assignor of one-half to Felix Spitzner.

1,290,900. Combined rubber and steel eraser for lead pencils. F. K. Butler, Seattle, Wash.

1,290,927. Life-preserver. W. H. de Fontaine, Sr. and Jr., New York City.

1,290,979. Balloon, with inner vacuum chamber and controllable means for inflating inner chamber for purpose of descent, etc. P. T. Griffith, New York City.

1,291,156. Resilient tire. W. J. Robinson, Denver, Colo.

1,291,187. Tire-pressure gage. M. C. Schweinert, West Hoboken, N. J.

1,291,345. Internal tire armor. J. B. Zimdars, San Francisco, Calif. (Original application divided.)

1,291,346. Inner tube for pneumatic tires. J. B. Zimdars, San Francisco, Calif. (Original application divided.)

1,291,537. Demountable tire rim. J. H. Jones, Covington, Ky.

1,291,554. Carbonator with perforated rubber disk for admitting minute streams of gas into receptacle for liquid. A. L. Koenig, assignor to The Koenig Carbonators, Inc.—both of Chicago, Ill.

1,291,639. Arch support for shoes. T. Coffey, West Tulsa, Okla.

1,291,648. Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Corp.—both of New York City.

1,291,649. Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Corp.—both of New York City.

1,291,650. Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Corp.—both of New York City.

1,291,676. Pneumatic tire structure, combining a pneumatic tire with a flap joining a side cover for wheel. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York City.

JANUARY 21, 1919.

1,291,727. Resilient wheel. B. Bayliss, St. Louis, Mo.

1,291,739. Name plate for rubbers. A. C. Booth, Burlington, Vt.

1,291,835. Fountain-pen blotter. J. Goldstein, West Hazelton, Pa.

1,291,896. Demountable rim for tires. J. J. and C. C. Hruby, St. Joseph, Mo.

1,291,930. Demountable rim for pneumatic tires. M. B. Korman, Washington, D. C.

1,291,948. Inner tubular support for pneumatic tires, molded from plastic, unvulcanized rubber. J. T. Lister, near Wellington, O.

1,291,972. Soft rubber sleeve for attaching to pencils and penholders. M. J. McGuigan, Ashland, Wis.

1,291,991. Toy balloon. H. Marui, New York City.

1,292,042. Waterproof garment-supporter. I. Phillips, Brookline, Mass.

1,292,115. Respirator. W. Soderling, New York City.

1,292,120. Concave rolled suction-cup heel. E. D. Stalfort, Baltimore, Md.

1,292,139. Demountable rim for tires. G. L. Summers, Huntington, W. Va.

1,292,161. Resilient tire. J. R. Valdes, Key West, Fla.

1,292,299. Cushioned wheel. F. A. Frommann, Chicago, Ill.

1,292,300. Cushion tire. F. A. Frommann, Chicago, Ill.

1,292,345. Cushion tire. W. C. Martin, assignor by direct and mesne assignments to Morand Bros.-Martin Cushman Wheel Co.—both of Chicago, Ill.

1,292,357. Resilient wheel. V. H. Nalinne, Brussels, Belgium.

1,292,360. Rubber heel. F. A. Nolen, St. Paul, Minn.

1,292,405. Pneumatic tire. L. Loeb, New York City.

JANUARY 28, 1919.

1,292,504. Wheel with demountable and permanent rims for tires. G. A. Mitchell, assignor of one-half to H. A. Gilbert—both of Aberdeen, Md.

1,292,519. Puncture-proof tread-block for pneumatic tires. A. Rosenberg and A. H. Rosenthal, Brooklyn, N. Y.

1,292,524. Device for connecting hose to faucets of varying size. L. W. Serrell, Plainfield, N. J.

1,292,564. Fastener for cushion tires on clincher rims. T. Barnes, assignor to Barnes Cushion Tire Co.—both of Denver, Colo.

1,292,587. Life-preserver with inflatable portions. D. Del Re, Iron River, Mich.

2,292,596. Stay-fastener for balloons. J. R. Gammeter, Akron, O., and J. Bourguignon, Billancourt, France, assignors to The B. F. Goodrich Co., New York City.

1,292,601. Combination wheel and demountable rim. L. B. Harvey, assignor to Interlocking Auto Rim Co.—both of Stockton, Calif.

1,292,690. Hot-water and ice-bag closure. J. J. Bowes, Jr., Pensacola, Fla.

1,292,736. Fountain pen. A. G. Elser, assignor to C. E. Barrett—both of Chicago, Ill.

1,292,826. Reinforced tread for automobile tires. J. F. Loughran, Chehalis, Wash.

1,292,945. Collapsible demountable rim for tires. E. H. Wulff, Toledo, O.

1,292,961. Tire casing. L. A. Page, Providence, R. I.

ISSUED FEBRUARY 4, 1919.

1,292,993. Rubber sandal with vamp cut on the straight and its upper portion folded over on itself. J. J. Batterman, assignor to Batterman Rubber Co.—both of Boston, Mass.

1,293,015. Demountable rim for vehicle wheels. B. E. Braucht, Cartwright, N. D.

1,293,089. Shoulder and body brace. W. D. Hardy, New York City.

1,293,158. C. W. Miegel, Jersey City, N. J.

1,293,221. Veil with elastic cord in edge. I. Silverberg, Far Rockaway, N. Y., assignor to Silverberg Import Co., Inc., New York City.

1,293,283. Demountable rim for vehicle wheels. C. C. Wolf, assignor of one-half to A. A. Bournemann—both of Morrison, Wis.

1,293,337. Rubber-soled canvas shoe. M. H. Clark, Hastings-upon-Hudson, N. Y., assignor to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn.

1,293,427. Corset with elastic inserts. J. E. Heilner, New York City.

1,293,473. Resilient tire. J. H. Krall, Portland, Ore.

1,293,498. Pneumatic tire. P. Marino, Brooklyn, N. Y., assignor of one-third to C. Marino, Brooklyn, N. Y., and one-third to D. Marino, West Hoboken, N. J.

1,293,528. Pneumatic tire in combination with means for making it wider than deep, restricting radial distention, etc. J. F. Palmer Riverside, Ill.

1,293,558. Cushion wheel. M. S. Schwartz, Brooklyn, N. Y.

1,293,645. Waterproof hat-covering. L. Henschel, New York City.

THE DOMINION OF CANADA.

ISSUED JANUARY 7, 1919.

188,138. Sound deadener composed of composite sheet material comprising a metallic sheet and alternate sheets of asbestos and fiber and rubber composition, contacted by pressure and vulcanized. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of N. D. Crawford, Elizabeth, N. J., U. S. A.

188,149. Collapsible bucket. The Du Pont Fabrikoid Co., Wilmington, assignee of G. F. Lord, Holly Oak—both in Del., U. S. A.

ISSUED JANUARY 14, 1919.

188,233. Pneumatic tire and wheel. W. J. Vincent, Cardiff, Wales.

ISSUED JANUARY 21, 1919.

188,310. Resilient tire. W. A. Anglemyer, Indianapolis, Ind., U. S. A.

188,353. Gasket for air-pipe couplings. J. W. Southern, Vancouver, B. C.

ISSUED JANUARY 28, 1919.

188,461. Tire casing. W. Kline, Lake, and J. P. Frisby, Akron, assignee of ½ interest—both in Ohio, U. S. A.

188,463. Fountain-pen filler. H. Carman, assignee of F. Riesenberg—both of New York City, U. S. A.

ISSUED FEBRUARY 11, 1919.

188,668. Golf ball. E. Miller, London, England.

188,697. Bath mat. L. D. Tolley, Algiers, La., U. S. A.

188,700. Trousers support. W. Baake, West Hoboken, N. J., U. S. A.

188,702. Device for removing bulbs from electric lamps. H. D. Grinnell, Pittsfield, Mass., U. S. A.

ISSUED FEBRUARY 25, 1919.

188,883. Pressure gage. A. Schrader's Son, Inc., New York City, assignee of W. A. Allen, Yonkers—both in N. Y., U. S. A.

ISSUED MARCH 4, 1919.

188,905. Demountable rim for tires. E. G. Budd, Philadelphia, Pa.

188,969. Stopper for hot-water bottle. H. P. Kraft, Ridgewood, N. J.

THE UNITED KINGDOM.

ISSUED FEBRUARY 5, 1919.

121,244. Detachable wearing surface for the soles of rubber and rubber-soled footwear. J. H. Gill and J. D. Rea, High street, Dunedin, New Zealand.

121,411. Pneumatic tires with beaded edges comprising hard-rubber cores having wire embedded therein. G. H. Thomas, 27 Buckingham Gate, and E. J. Edgar, 16 Teignmouth Road, Brondesbury—both in London.

121,443. Kneeling pad with inflatable cushion. E. M. Hamilton, 10 Chester Crescent, Newcastle-on-Tyne.

ISSUED FEBRUARY 12, 1919.

9,956. Valves for respirators. R. Donald, 30 Parliament Hill Mansions, Highgate Road, London. (Not yet accepted.)

121,495. Electrically heated clothing for aviators, etc. A. A. Lemercier, 147 avenue de Clichy, Paris.

121,538. Rubber-covered spring tire. E. D. Drury, 24 Norfolk Row, Sheffield.

ISSUED FEBRUARY 19, 1919.

121,634. Waterproof soles for boots, etc. E. S. Frizzoni, 24 Via Mancini, Rome.

121,657. Garment for airmen. R. H. Davis, 187 Westminster Bridge Road, Westminster.

121,703. Rubber horseshoes. F. Kusiak, 410 West 56th street, New York City, U. S. A.

121,706. Soles with staggered recesses, for boots, etc. A. G. Knight, 9 Mount Nod Road, Streatham Hill, London.

Chemical Patents will be found on pages 364. Machinery Patents on page 366.

ISSUED FEBRUARY 26, 1919.

121,779. Demountable rim for tires. W. Ormsby, 366 High street, Smethwick, Staffordshire.

121,829. Mattress with aperture to receive hot-water bottle. J. Hilton, 74 Townsend street, Dublin.

121,838. Rubber garment for airmen and others, to serve as gas mask, etc. R. G. Jakeman, 6 Kirkdale Road, Leytonstone, London.

121,841. Rubber pads for crutch-tips, etc. M. Lynde, 23 Amherst Road, Withington, Manchester.

121,843. Horseshoe with rubber pad. B. Tattersall, Hey Houses, and J. Lawrence, Montauban, Clifton Drive—both of St. Anne's-on-the-Sea, Lancashire.

121,845. Watch wristlet composed of rubber band, etc. C. J. Keep, 33 Lanark Villas, Maida Vale, London.

SWITZERLAND.

NOVEMBER 15, 1918.

80,157. Tire support for automobile wheels. Edward Downing, 637 Turk street, San Francisco, Calif., U. S. A. (E. Imer-Schneider, Geneva.) Priorities U. S. A., February 21 and December 1, 1916, and January 2, 1917.

NOVEMBER 30, 1918.

80,221. Arch support for shoes. Erich Schenk, 466 Washington street, Newark, N. J. (Fritz Isler, Zurich.) Priority U. S. A., October 16, 1917.

INDIA.

(PATENTS ISSUED, WITH DATES OF APPLICATION.)

3,711. (June 11, 1918.) Improvements in resilient wheels for motor cars and other vehicles. A. A. Crozier.

3,758. (July 12, 1918.) Improvements in rubber heels. C. V. Chamberlain.

3,807. (July 29, 1918.) Improvements in rubber tires. E. B. Killen.

3,899. (September 23, 1918.) Rubber seed-removing knife. V. Mardon.

NEW ZEALAND.

ISSUED DECEMBER 31, 1918.

40,634. Child's comforter. H. S. Briggs, 92 Toorak Road, South Yarra, Victoria, Australia.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

487,984. (December 14, 1917.) Dust caps for valves of pneumatic tires. A. Schrader's Son, Inc., Brooklyn, N. Y., U. S. A.

487,964. (December 12, 1917.) Device for the treatment of invalids by air. J. Claes.

488,120. (December 22, 1917.) Pneumatic camp bed. L. Avorio.

488,371. (January 3, 1918). Apparatus for chloroform anesthesia. G. E. Brochet, 4 rue de la Grande-Chaumière, Paris.

488,448. (October 5, 1915.) Improvements in dirigibles. W. M. Webber.

488,557. (May 22, 1916.) Metallic and resilient wheel. A. E. Jourfier, 90 rue St. Alexandre, Bédarieux (Hérault), Paris.

488,923. (February 15, 1918.) Improvements in vehicle wheels. A. W. Benjamin.

488,945. (February 16, 1918.) Improved resilient wheel. J. Stuart.

488,974. (April 20, 1917.) Soles and pattens of leather and rubber for shoes. Société Française du Cuir Armé.

489,043. (February 26, 1918.) Improvement in vehicle wheels. W. Brown.

TRADE MARKS.

THE UNITED STATES.

NO. 86,953. The word FORD in fancy script letters—rubber tires. Ford Motor Co., Highland Park, Mich.

107,268. The words CO-PRO—coat or vest-shaped waterproof body-protectors. Albert Nathan, Glen Cove, N. Y.

108,029. Representation of head of Eastern wizard holding arch-support in hands, inserting pad—appliances for correcting foot deformities. Wizard Foot Appliance Co., St. Louis, Mo.

108,164. The word STAR in black letters superimposed on a black star—pneumatic and solid tires and tire patches, liner, and retread bands. The Star Rubber Co., Akron, O.

113,702. The word RUSSELL within an oval—woven machinery belts. The Russell Manufacturing Co., Middletown, Conn.

113,705. The word STANDBY above a four-leaved clover within an oval formed by a tied cable cord—asbestos and rubber packing. James H. Taylor, Baltimore, Md.

113,863. The initials M. P. C.—puncture-sealing compounds for pneumatic tires. D. S. Mumphrey, New Orleans, La.

113,892. The representation of a man walking with his fingers in his ears—rubber heels. Carl W. Winkler, Chicago, Ill.

113,920. The representation of Uncle Sam seizing the Kaiser from behind, above the words YANKEE GRIP—fabric and rubber tire-patches. W. M. Prince, Tacoma, Wash.

114,142. The word SWEETIE in fancy script letters—rubber dolls. The Faultless Rubber Co., Ashland, O.

114,272. The representation of a little girl mending a tire puncture—puncture-curing compound for pneumatic tires. J. Mangus, Beatrice, Neb.

THE DOMINION OF CANADA.

23,990. The words KOLD PROSSO—fruit-jar rubbers. Smalley, Kivlan & Onthank, Boston, Mass., U. S. A.

24,105. The words ROYAL CORD—automobile tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Que.

24,123. The word BRIARCLIFF—automobile tires, tubes, etc. Van der Linde Rubber Co., Limited, Toronto, Ont.

24,125. The word ECONOMY—tires or rubber goods not including footwear. The United Rubber Manufacturing and Reclaiming Co., Limited, Toronto, Ont.

24,128. The words VULCO-CORD—belts, especially for automobile fans and generator driving. The Gates Rubber Co., Denver, Colo., U. S. A.

24,130. The word PARAKNIT—corsets, elastic girdles, hose and abdomen supporters, hip confiners and brassières. Treo Co., Inc., New York City, U. S. A.

24,172. The word CAMACHINE—slitting, rewinding, cutting and perforating machines and parts therefor. Cameron Machine Co., Brooklyn, N. Y., U. S. A.

24,259. The words BARRELED SUNLIGHT surrounded by rays and enclosed in a rectangle—paints of all kinds. United States Gutta Percha Paint Co., Providence, R. I., U. S. A.

THE UNITED KINGDOM.

382,156. The word TENAX—compositions not included in classes other than No. 40, of which india rubber is the predominating ingredient. Gutta Percha and Rubber, Limited, 47 Yonge street, Toronto, Ontario, Canada. (Care of Lloyd, Wise & Co., 10 New Court, Lincoln's Inn, London, W. C. 2, England.)

382,555. The representation of a tire through which is thrust a rubber-gloved hand holding a spatula—all goods included in Class 40. The Miller Rubber Co., 1269 South High street, Akron, Ohio, U. S. A. (Care of Marks & Clerk, 57 Lincoln's Inn Fields, London, W. C. 2, England.)

385,314. The words BALL-BAND—boots and shoes of rubber, rubber and wool, etc. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Indiana, U. S. A. (Care Marks & Clerk, 57 Lincoln's Inn Fields, London, W. C. 2, England.)

FOREIGN TRADE MARKS GRANTED TO AMERICANS.

SPAIN.

53,005. The word NEVERLEEK within an oval—waterproof fabrics for automobile and carriage tops. F. S. Carr Co., Boston, Mass., U. S. A.

AUSTRALIA.

22,780. The words PENNSYLVANIA VACUUM CUP preceded and followed by the letters V and C forming a monogram—rubber tires. Pennsylvania Rubber Co., Jeannette, Pa., U. S. A. (W. J. Spruson, Daily Telegraph Building, King street, Sydney, Australia.)

23,521. The word PRESERVO in black letters outlined with white against a black background within a geometric figure—a compound for waterproofing cotton duck, etc. Robeson Preservo Products Co., 25 White Block, Port Huron, Mich., U. S. A. (Sidney Hendley, Fink's Buildings, Elizabeth street, Melbourne, Australia.)

THE FRENCH REPUBLIC.

25,745. The word RAYBESTOS—shoes and linings for vehicle brakes. Raybestos Co., Bridgeport, Conn., U. S. A.

DESIGNS.

THE UNITED STATES.

NO. 52,868. Fountain pen. Patented January 14, 1919. Term 14 years. W. T. Fitzpatrick, Waterloo, Ia.

52,893. Tire. Patented January 14, 1919. Term 14 years. J. W. McGuire, assignor to The Brunswick-Balke-Collender Co.—both of Chicago, Ill.

52,899. Tire. Patented January 14, 1919. Term 14 years. C. S. Park, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.

52,893. 52,899. 52,959. 52,962. 52,975.

52,959. Tire. Patented February 4, 1919. Term 14 years. W. A. Miller, Columbus, O.

52,962. Tire. Patented February 4, 1919. Term 7 years. A. L. Pashek, Newark, N. J.

52,975. Tire. Patented February 4, 1919. Term 14 years. C. B. Whittelsey, Hartford, Conn., assignor to United States Tire Co., New York City.

52,974. Liquid-spraying instrument. T. A. De Vilbiss, assignor to The De Vilbiss Manufacturing Co.—both of Toledo, O. Patented February 4, 1919. Term 14 years.

THE DOMINION OF CANADA.

4,514. Tire tread. Registered January 7, 1919. Term 18 years. The Canadian Consolidated Rubber Co., Limited, Montreal, Que.

Review of the Crude Rubber Market.

NEW YORK.

THE active dealers' demand, in evidence the last of February, for near-by plantation rubber to cover short sales gave strength to the market for an advance. On the first of March first latex spot was quoted at 55½-56 and upriver fine Pará at 58½ with very little demand. During the entire month buyers have displayed little or no interest in the market which sank into a state of practical stagnation with slowly falling quotations reaching 51 for first latex and 55½ for upriver fine.

The outlook is still favorable to buyers whose needs, however, are not urgent because of the prevailing industrial uncertainties.

The course of the market quotations on plantations and Pará during the month were as follows:

PLANTATIONS.—March 4, spot latex crêpe, 55 cents; March arrivals, 54 cents; May to June arrivals, 50½ cents; July to December arrivals, 50 cents. On March 20 the prices were: spot, 52 cents; March arrivals, 51¾ cents; May arrivals, 51 cents; June arrivals, 50½ cents.

March 4, spot ribs, 54 cents; spot, c. i. f. Pacic Coast, 50½ cents; April arrivals, 52 cents; May-July arrivals, 50½ cents. March 20, 51 cents; April arrivals, 50½ cents; May arrivals, 50 cents; June arrivals, 49½ cents.

March 4, No. 1 amber gristly crêpe was quoted at 51½ cents for near-by and 47 cents for July to December arrivals. March 20, April to June arrivals were quoted at 47½ cents, and July to December arrivals at 46 cents.

March 4, No. 1 roll brown crêpe, spot, sold for 36½ cents; July to December arrivals, at 32 cents. On March 20 these prices had declined to 35½ cents and 31 cents, respectively.

PARÁS.—March 4, upriver fine, spot, was 58 cents; islands fine March-April, 47¾ cents; upriver coarse, spot 34¾ cents; cametá, coarse, March-May, 22 cents.

March 20, upriver fine, spot, was 56 cents; upriver coarse, spot, 34½ cents, and April-June, 34 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, one year ago, one month ago and on March 26, the current date:

	Apr. 1, 1918.	Mar. 1, 1919.	Mar. 26, 1919.
PLANTATION HEVEA—			
First latex crêpe / *Hevea first crêpe	60 @	55 @56	51 @
Amber crêpe No. 1	54 @55	49 @49½	48 @
Amber crêpe No. 2	52 @	48 @48½	47 @
Amber crêpe No. 3	51 @	47 @47½	46 @
Amber crêpe No. 4	50 @	45 @45½	45 @
Brown crêpe, thick clean	49 @	46 @46½	45 @
Brown crêpe, thin clean	49 @	46 @	46 @
Brown crêpe, thin specky	46 @	44 @45	43 @
Brown crêpe, rolled	33 @	37 @38	35 @
Smoked sheet, ribbed standard quality / *Hevea ribbed smoked sheets	60 @	54 @55	50 @
Smoked sheet, plain standard quality / *Hevea plain or smooth smoked sheets	58 @	53 @54	48 @
Unsmoked sheet, standard quality / *Hevea unsmoked sheets	56 @	53 @	49 @
Colombo scrap No. 1	37 @	38 @	@
Colombo scrap, No. 2	35 @	37 @	@
BRAZILIAN PARAS—			
Upriver fine	60 @	58 @	56 @
Upriver medium	54 @	53 @	51 @
Upriver coarse	34 @	34 @	34 @
Upriver weak fine	46 @	45 @	44 @
Upper caucho ball	34 @	34 @	34½ @
Islands fine	48 @	49 @	48 @
Islands medium	**40 @	44 @	43 @
Islands coarse	23 @	21 @	**22 @
Cametá, coarse	23½ @	22 @	**23½ @
Lower caucho ball	32 @	32 @	31½ @
Peruvian fine	55 @	@	53 @
Tapajos fine	55 @	55 @	53 @
AFRICANS—			
Niger flake, prime	27 @	24 @	@
paste	@	@	@
Benguela, extra No. 1, 28%	@	@	@
Benguela No. 2, 32½%	@	@	@
Congo prime, black upper	48 @	45 @	@
Congo prime, red upper	@	@	@
Rio Nunez ball	46 @	@	@
Rio Nunez sheets and strings	@	@	@
Conakry niggers	@	@	@
Massai sheets and strings	@	@	@
CENTRALS—			
Corinto scrap	35 @36	36 @37	33½ @34
Esmeralda sausage	35 @36	36 @	33½ @34
Central scrap	35 @36	36½ @	33½ @34
Central scrap and strip, 75%	34 @	33 @	32 @32½
Central wet sheet, 25%	31 @	24 @25	23 @
Guayule, 20% guarantee	@	33 @34	30 @
Guayule, dry	@	46 @	40 @
MANICOBAS—			
Ceara negro heads	@	@	@
Ceara scrap	@	@	@
Manicoba (basis 30% loss washing and drying)	41 @	37 @38	34 @
Mangabeira thin sheet	36 @	40 @41	38 @
EAST INDIAN—			
Assam crêpe	48 @	@	@
Assam onions	48 @	@	@
Penang block scrap	38 @	38 @	@
BALATA—			
Block, Ciudad Bolivar	**72 @	71 @72	76 @
Colombia	58 @	60 @61	58 @
Panama	**55 @	56 @	56 @
Surinam sheet	88 @92	88 @	96 @
amber	**97 @	90 @	98 @
PONTIANAK—			
Banjermassin	13½ @14	13½ @	13½ @
Palembang	@	@	@
Pressed block	21 @22	19 @	20 @
Sarawak	@	@	@
GUTTA PERCHA—			
Gutta Siak	20½ @22	20 @	23 @
Red Macassar	2.25@2.50	2.50@3.00	3.00@

*Rubber Association of America nomenclature.
**Nominal.

RECLAIMED RUBBER.

The anticipated demand for reclaimed rubber mentioned last month has begun to materialize under the stimulation of a distinct easing up in prices on all grades of reclaimed except red, which remains fixed. The market, however, is not active and the reclaiming mills are still operating on part time. The sentiment of the reclaimers grows more hopeful with the approach of peace and resumption of general industrial activity.

NEW YORK QUOTATIONS.

MARCH 26, 1919.

Subject to change without notice.

Standard Reclaims.			
Floating	lb.	30	@35
Friction	lb.	30	@35
Mechanical	lb.	11	@12
Red	lb.	20	@25
Shoe	lb.	14½	@15
Tire, auto	lb.	16¾	@17¼
truck	lb.	12¼	@12¾
White	lb.	22	@24

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	March.		
PLANTATIONS.	1919.[1]	1918.	1917.
First latex crêpe	$0.56½ @ 0.51	$0.54 @0.50½	$0.76 @0.73
Smoked sheet ribbed	.55½ @ .50	.54 @ .48½	.76 @ .73
PARAS.			
Upriver fine	.58½ @ .55½	.61 @ .56	.81 @ .76
Upriver coarse	.35 @ .34	.36½ @ .34	.54 @ .51
Islands, fine	.49½ @ .47½	.49 @ .46	.75 @ .72
Islands, coarse	.22½ @ .20	.24 @ .23	.36 @ .34
Cametá	.23 @ .21	.24 @ .23	.40 @ .37

[1] Figured only to March 26.

THE MARKET FOR COMMERCIAL PAPER.

During March the situation regarding commercial paper has been about the same as in February, New York banks not doing much, but out-of-town banks buying fairly at 5½ to 5¾ per cent for the best rubber names, and 6 to 6½ per cent for those not so well known.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [January 30, 1919]:

The quantity cataloged for this week's rubber auction was rather less than usual, amounting to 1,200 tons. Influenced by increased shipping facilities and lower freights, the sale opened to a strong demand, there being an unusually large number of buyers in the market, and, although prices show little change, the tone was distinctly firmer. Fine pale crêpe, of which there was very little on offer, sold up to 75 cents, a drop of ¼ cent on the week, while ribbed smoked sheet reached 73½ cents (one lot sold for 74 cents) a decline of 1 cent. Off grade sheet was readily taken up at prices ranging from 65 to 70 cents per pound; clean brown and dark crêpes were in good demand. The quantity sold was 710 tons.

The following was the course of values:

	In Singapore per Pound.[1]			Sterling Equivalent per Pound in London.		
Sheet, fine ribbed smoked	71½c	@	73½c	2/ 1¼	@	2/ 1¾
Sheet, good ribbed smoked	62	@	71	1/10½	@	2/ 1
Sheet, plain smoked	58	@	59½	1/ 9⅝	@	1/ 9¾
Sheet, plain unsmoked	62½	@	..	1/10¾	@	....
Crepe, fine pale	72	@	75	2/ 1⅛	@	2/ 2⅛
Crêpe, good pale	65	@	71½	1/11⅜	@	2/ 2⅛
Crêpe, fine brown	60	@	65	1/10	@	1/11⅛
Crêpe, good brown	45	@	59	1/ 5¾	@	1/ 9¾
Crêpe, dark	34½	@	48	1/ 2¾	@	1/ 6½
Crêpe, bark	22	@	39	1/11¼	@	1/ 4
Scrap, virgin and pressed	39	@	..	1/ 4	@	....
Scrap, loose	25	@	..	1/	@	....

[1] Quoted in S. S. Currency.

EXPORTS OF CEYLON GROWN RUBBER.

To—	Twelve Months Ended December 31. 1917.	1918.
United Kingdom ..... *pounds*	34,481,672	20,391,016
France	1,628,015	576,505
Italy	387,535	.....
Russia	229,673	.....
Western Australia	.....	.....
South Australia	27	.....
Victoria[1]	1,001,173	641,648
New South Wales[1]	151,394	472,802
United States	31,991,580	18,759,077
Canada and Newfoundland	1,270,751	6,033,022
Africa	.....	2,294
India	1,390	5,195
Straits Settlements	28	33,750
China	29	.....
Japan	208,362	303,819
Totals	71,351,629	47,219,128

EXPORTS DURING PAST TEN YEARS.

Totals 1918	47,219,128	Totals 1913	25,433,551
1917	71,351,629	1912	15,001,075
1916	54,698,729	1911	7,154,658
1915	46,566,187	1910	3,586,854
1914	35,318,269	1909	1,492,580

[1] These figures include cargoes for transshipment to New Zealand, other parts of Australia, and dependencies.

(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

	October.[1] 1917.	1918.	Ten Months Ended October 31. 1917.	1918.
To England ..... *bilos*	101,000	.....	2,193,000	1,659,000
United States	1,170,000	157,000	12,370,000	5,204,000
Singapore	226,000	233,000	1,318,000	6,718,000
Other countries	5,000	266,000	24,000	1,287,000
Totals	1,502,000	656,000	15,905,000	14,868,000
From Batavia	940,000	332,000	9,284,000	7,839,000
Samarang	4,000	5,000	191,000	129,000
Soerabaya	557,000	319,000	6,191,000	6,668,000
Other ports	1,000	.....	239,000	232,000
Totals	1,502,000	656,000	15,905,000	14,868,000

[1] Corrected figures to replace those given in THE INDIA RUBBER WORLD, March 1, 1919.

	November 1917.	1918.	Eleven Months Ended November 30. 1917.	1918.
To England ..... *bilos*	.....	.....	2,192,000	1,659,000
United States	946,000	306,000	13,316,000	5,510,000
Singapore	264,000	460,000	1,583,000	7,178,000
Other countries	28,000	110,000	53,000	1,397,000
Totals	1,238,000	876,000	17,144,000	15,744,000
From Batavia	696,000	491,000	9,980,000	8,331,000
Samarang	9,000	2,000	200,000	132,000
Soerabaya	532,000	289,000	6,723,000	6,957,000
Other countries	1,000	94,000	241,000	324,000
Totals	1,238,000	876,000	17,144,000	15,744,000

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to government orders prohibiting access to the records.

[The Figures Indicate Weight in Pounds.]

PARAS.

	Fine.	Medium.	Coarse.	Caucho.	Cametá.	Totals.
FEBRUARY 19. By the *Uberaba* from Manáos.						
Aldens' Successors, Limited	6,701	38,991	7,601	.....	.....	53,293
MARCH 10. By the *Josephine* from Pará.						
H. A. Astlett & Co.....	20,000	.....	5,500	67,500	.....	93,000
MARCH 10. By the *Josephine* from Manáos.						
Meyer & Brown.....	44,800	.....	.....	239,100	.....	283,900
MARCH 11. By the *Henrik Ibsen* from Manáos.						
Aldens, Successors, Ltd..	24,892	11,802	9,068	26,961	.....	72,723
[1]Meyer & Brown.....	78,400	.....	.....	.....	.....	78,400
General Rubber Co.....	268,800	.....	103,040	22,400	.....	394,240
MARCH 22. By the *Alban* from Pará.						
General Rubber Co.....	145,600	.....	.....	.....	56,000	201,600
H. A. Astlett & Co.....	724,000	.....	335,000	.....	.....	1,059,000

[1]Includes medium also.

CRUDE RUBBER ARRIVALS AT NEW YORK AND PACIFIC PORTS AS REPORTED.

PLANTATIONS.

	Shipment from:	Arrived at:	Shipped to:	Pounds.
DECEMBER 30, 1918, S. S. *Hwah Maru.*				
Adolph Hirsch & Co....	Colombo	Vancouver	New York	156,800
JANUARY 24, 1919, S. S. *Shimpo Maru.*				
Wm. H. Stiles & Co....	Singapore	Seattle	New York	134,400
FEBRUARY 5, S. S. *Soerakarta.*				
Wm. H. Stiles & Co....	Batavia	San Francisco	New York	33,600
FEBRUARY 8, S. S. *Arabia Maru.*				
Wm. H. Stiles & Co....	Singapore	Seattle	New York	145,600
L. Littlejohn & Co., Inc.	Far East	Tacoma	New York	589,400
Total				735,000
FEBRUARY 10, S. S. *Senator.*				
L. Littlejohn & Co., Inc..	Far East	Seattle	New York	158,600
FEBRUARY 10, S. S. *Kathlamba.*				
L. Littlejohn & Co., Inc..	Colombo	New York	New York	1,153,600
FEBRUARY 12, S. S. *Himalaya Maru.*				
Wm. H. Stiles & Co....	Singapore	Tacoma	New York	38,080
Aldens' Successors, Ltd..	Yokohama	Tacoma	New York	143,584
L. Littlejohn & Co., Inc..	Far East	Seattle	New York	179,200
The United Malaysian Co., Ltd.....	Singapore	Seattle	New York	22,400
Total				383,264
FEBRUARY 12, S. S. *Koan Maru.*				
Wm. H. Stiles & Co....	Singapore	Seattle	New York	22,400
Aldens' Successors, Ltd..	Singapore	Seattle	New York	4,482
L. Littlejohn & Co., Inc..	Far East	Seattle	New York	448,000
Total				474,882
FEBRUARY 16, S. S. *Key West.*				
Wm. H. Stiles & Co....	Singapore	Vancouver	New York	145,600
Aldens' Successors, Ltd..	Singapore	Vancouver	New York	32,494
L. Littlejohn & Co., Inc..	Singapore	Vancouver	New York	975,600
Fred Stern & Co.....	Singapore	Vancouver	New York	40,320
Total				1,194,014
FEBRUARY 18, S. S. *Venezuela.*				
Aldens' Successors, Ltd..	Yokohama	San Francisco	New York	91,815
FEBRUARY 21. S. S. *Bellerophon.*				
L. Littlejohn & Co., Inc..	London	New York	New York	133,699
FEBRUARY 24, S. S. *Oridono Maru.*				
Rubber Trading Co.....	Singapore	Seattle	New York	48,800
Aldens' Successors, Ltd..	Kobe	Seattle	New York	38,200
Fred Stern & Co.....	Far East	Seattle	New York	33,600
Wm. H. Stiles & Co....	Singapore	Seattle	New York	20,160
Total				140,760
FEBRUARY 25, S. S. *Manhattan.*				
Aldens' Successors, Ltd..	Liverpool	New York	New York	.....
FEBRUARY 27, S. S. *Kiyo Maru.*				
Aldens' Successors, Ltd.....		San Francisco	New York	67,390
FEBRUARY 28, S. S. *Siberia.*				
Aldens' Successors, Ltd..	Yokohama	San Francisco	New York	44,800
MARCH 3, S. S. *Easterling, Tyndarius, Kamo Maru.*				
J. T. Johnstone & Co...	Singapore	Seattle	New York	54,208
MARCH 3, S. S. *Caronia.*				
Wm. H. Stiles & Co....	Liverpool	New York	New York	44,800
L. Littlejohn & Co., Inc..	London	New York	New York	299,749
Total				344,549
MARCH 3, S. S. *Vennonia.*				
L. Littlejohn & Co., Inc..	London	New York	New York	790,888
Aldens' Successors, Ltd..	Liverpool	New York	New York	505,467
Total				1,296,355
MARCH 3, S. S. *Lapland.*				
Aldens' Successors, Ltd..	Liverpool	New York	New York	229,679
MARCH 3, S. S. *Belgic.*				
Aldens' Successors, Ltd..	Liverpool	New York	New York	123,372
MARCH 4. S. S. *Grayson.*				
J. T. Johnstone & Co...	Singapore	Seattle	New York	25,650
MARCH 5, S. S. *Kanagawa Maru.*				
L. Littlejohn & Co., Inc..	Far East	Seattle	New York	56,000

Shipment from:	Arrived at:	Shipped to:	Pounds.
March 5, S. S. *Suwa Maru.*			
L. Littlejohn & Co., Inc.. Far East	Seattle	New York	112,000
March 5, S. S. *Cyclops.*			
L. Littlejohn & Co., Inc.. Far East	Seattle	New York	627,200
Fred Stern & Co..... Far East	Seattle	New York	125,440
Aldens' Successors, Ltd.. Yokohama	Seattle	New York	173,600
Total			926,240
March 10, S. S. *Rotti.*			
L. Littlejohn & Co., Inc.. Java	New York	New York	136,695
March 11. S. S. *Toronto.*			
J. T. Johnstone & Co., Inc. Hull	New York	New York	64,064
March 13, S. S. *August.*			
Wm. H. Stiles & Co.... Colombo	New York	New York	16,000
L. Littlejohn & Co., Inc.. Colombo	New York	New York	656,592
Fred Stern & Co..... Colombo	New York	New York	5,600
Total			678,192
March 13, S. S. *Kamo Maru.*			
J. T. Johnstone & Co., Inc.....	.....	New York	41,888
United Malaysian Rubber Co., Limited ..... Colombo	New York	New York	529,600
Total			571,488
March 14, S. S. *Malancha.*			
Meyer & Brown..... London	New York	New York	78,400
Wm. H. Stiles & Co.... London	New York	New York	145,600
L. Littlejohn & Co., Inc. London	New York	New York	477,640
Aldens' Successors, Ltd.. Liverpool	New York	New York	744,792
J. T. Johnstone & Co., Inc. London	New York	New York	124,500
Total			1,500,932
March 15, S. S. *Valucca.*			
L. Littlejohn & Co., Inc.. London	New York	New York	795,053
March 17, S. S. *Willis.*			
Meyer & Brown..... Singapore	San Francisco	New York	14,600
L. Littlejohn & Co., Inc.. Java	San Francisco	New York	78,400
Fred Stern & Co.....	San Francisco	New York	59,360
Aldens' Successors, Ltd.. Yokohama	San Francisco	New York	42,560
Rubber Trading Co..... Singapore	San Francisco	New York	56,000
Total			250,920
March 17, S. S. *Minnedosa.*			
Meyer & Brown..... Liverpool	St. John's	New York	44,800
March 18, S. S. *Tensho Maru.*			
Wm. H. Stiles & Co.... Singapore	Seattle	New York	280,000
L. Littlejohn & Co., Inc.. Singapore	Seattle	New York	1,344,000
Meyer & Brown..... Singapore	Seattle	New York	201,600
Rubber Trading Co..... Singapore	Seattle	New York	112,000
General Rubber Co..... Singapore	Seattle	New York	136,340
United Malaysian Rubber Co., Limited ..... Singapore	Seattle	New York	112,000
Total			2,185,940
March 19, S. S. *Yebishi Maru.*			
L. Littlejohn & Co., Inc.. Colombo	New York	New York	325,464
United Malaysian Rubber Co., Limited ..... Colombo	New York	New York	201,600
Total			527,064
March 21. S. S. *Yaquina.*			
L. Littlejohn & Co., Inc.. San Fran.	New York	New York	24,648
March 25, S. S. *Manhattan.*			
Aldens' Successors, Ltd., Liverpool	New York	New York	84,282
PONTIANAK.			
February 24, S. S. *Oridono Maru.*			
L. Littlejohn & Co., Inc. Singapore	Seattle	New York	553,104
February 25, S. S. *Key West.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	222,520
February 25, S. S. *Himalaya Maru.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	112,000
March 5, S. S. *Cyclops.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	280,000
L. Littlejohn & Co., Inc. Singapore	Seattle	New York	158,053
Total			438,055
March 17, S. S. *Willis.*			
L. Littlejohn & Co., Inc. Singapore	San Francisco	New York	108,000
GUTTA PERCHA.			
February 21, S. S. *Senator.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	159,040
February 25, S. S. *Himalaya Maru.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	105,840
February 25, S. S. *Key West.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	44,800
March 5, S. S. *Cyclops.*			
The United Malaysian Rubber Co., Ltd..... Singapore	Seattle	New York	120,960
March 7, S. S. *Grotius.*			
L. Littlejohn & Co., Inc. Singapore	San Francisco	New York	100,000
March 17, S. S. *Willis.*			
L. Littlejohn & Co., Inc. Singapore	San Francisco	New York	33,600
GUTTA SIAK.			
February 24, S. S. *Oridono Maru.*			
L. Littlejohn & Co., Inc. Singapore	Seattle	New York	22,649
March 7, S. S. *Grotius.*			
L. Littlejohn & Co., Inc. Singapore	San Francisco	New York	33,600
MANIÇOBAS.			
March 12, S. S *Times.*			
Adolph Hirsch & Co.... Bahia	New York	New York	221,558
March 12, S. S. *Times.*			
Adolph Hirsch & Co.... Bahia	New York	New York	19,841
GUAYULE.			
February 24, *by rail.*			
Continental-Mexican Rubber Co. ..... Mexico	Akron, O.	.....	69,800
March 11, *by rail.*			
Continental-Mexican Rubber Co. ..... Mexico	New York	.....	52,000
March 19, *by rail.*			
Continental-Mexican Rubber Co. ..... Mexico	Akron, O.	.....	56,000

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIPS' MANIFESTS.[1]

PLANTATIONS.

[Figured 180 pounds net to the case or bale.]

Shipment from:	Arrived at:	Shipped to:	Pounds.
February 2, 1919, S. S. *Venezuela.*			
Aldens' Successors, Limited	Hong Kong	San Francisco	60,840
Robinson & Co.....	Hong Kong	San Francisco	5,760
Total	.....	.....	66,600
February 22, 1919, S. S. *Kiyo Maru.*			
Poel & Kelly	Hong Kong	San Francisco	336,960
F. R. Henderson & Co.	Hong Kong	San Francisco	715,860
Aldens' Successors, Limited	Hong Kong	San Francisco	52,740
Total	.....	.....	1,105,560
February 24, S. S. *Atsuta Maru.*			
Rubber Importers & Dealers Co., Inc.....	Yokohama	Seattle	Seattle	45,360
L. Littlejohn & Co., Inc.	Yokohama	Seattle	Seattle	63,000
Raw Products Co.....	Yokohama	Seattle	Seattle	23,940
Total	.....	.....	132,300
February 24, S. S. *Oridono Maru.*			
William H. Stiles & Co.	Singapore	Seattle	New York	19,260
Robinson & Co.....	Singapore	Seattle	New York	99,540
Curry, McPhillips & Co.	Singapore	Seattle	New York	33,480
Poel & Kelly.....	Singapore	Seattle	New York	430,000
Rubber Trading Co...	Singapore	Seattle	New York	39,780
Edward Maurer Co., Inc.	Singapore	Seattle	New York	151,200
Swinehart Tire & Rubber Co.	Singapore	Seattle	Akron, Ohio	122,760
Firestone Tire & Rubber Co.	Singapore	Seattle	Akron, Ohio	419,380
The Goodyear Tire & Rubber Co.	Singapore	Seattle	Akron, Ohio	314,460
Raw Products Co.....	Singapore	Seattle	Seattle	91,620
Edward Maurer Co., Inc.	Singapore	Seattle	Seattle	52,200
F. R. Henderson & Co.	Singapore	Seattle	Seattle	86,760
J. T. Johnstone & Co., Inc.	Singapore	Seattle	Seattle	41,220
Aldens' Successors, Limited	Singapore	Seattle	Seattle	32,940
Hood Rubber Co.....	Hong Kong	Seattle	Seattle	246,600
Mitsui & Co., Limited	Hong Kong	Seattle	Seattle	100,440
Eastern Rubber Co.....	Hong Kong	Seattle	Seattle	85,140
L. Littlejohn & Co., Inc.	Hong Kong	Seattle	Seattle	37,440
Aldens' Successors, Limited	Hong Kong	Seattle	Seattle	540
F. R. Henderson & Co.	Hong Kong	Seattle	Seattle	3,420
Dunlop Tire & Rubber Goods Co., Limited..	Hong Kong	Seattle	Seattle	11,700
The Goodyear Tire & Rubber Co.	Hong Kong	Seattle	Seattle	13,300
Raw Products Co.	Hong Kong	Seattle	Seattle	11,700
Poel & Kelly	Hong Kong	Seattle	Seattle	22,500
Rubber Trading Co...	Hong Kong	Seattle	Seattle	181,260
Various	Hong Kong	Seattle	Seattle	143,640
Total	.....	.....	2,792,280
February 27, 1919, S. S. *Katori Maru.*			
G. Kawahara & Co...	Yokohama	Seattle	Seattle	180,000

[1] Foot Note—The figures under this head and under crude rubber arrivals at Pacific Coast as reported, have been obtained from different sources; repetition may, therefore, occur

	Shipment from:	Arrived at:	Shipped to:	Pounds.
MARCH 1, 1919, S. S. *Siberia Maru.*				
The Goodyear Tire & Rubber Co.	Hong Kong	San Francisco		23,400
Poel & Kelly	Hong Kong	San Francisco		85,500
Edward Maurer Co., Inc.	Hong Kong	San Francisco		28,780
Aldens' Successors, Limited	Hong Kong	San Francisco		45,360
United States Rubber Co.	Hong Kong	San Francisco		1,704,960
Total				1,888,000
MARCH 5, 1919, S. S. *Cyclops.*				
Aldens' Successors, Limited	Singapore	Seattle	Seattle	152,100
The Goodyear Tire & Rubber Co.	Singapore	Seattle	Seattle	380,700
F. R. Henderson & Co. Inc.	Singapore	Seattle	Seattle	389,160
Fred Stern & Co.	Singapore	Seattle	Seattle	61,200
J. T. Johnstone & Co., Inc.	Singapore	Seattle	Seattle	73,440
L. Littlejohn & Co.	Singapore	Seattle	Seattle	547,740
Paterson, Simons & Co.	Singapore	Seattle	Seattle	5,220
Robinson & Co.	Singapore	Seattle	New York	1,800
Fred Stern & Co.	Singapore	Seattle	New York	47,520
Aldens' Successors, Limited	Singapore	Seattle	New York	10,800
W. R. Grace & Co.	Singapore	Seattle	New York	15,480
Poel & Kelly	Singapore	Seattle	New York	436,640
Edward Maurer Co., Inc.	Singapore	Seattle	New York	22,760
F. R. Henderson & Co.	Hong Kong	Seattle	New York	3,240
Firestone Tire & Rubber Co.	Singapore	Seattle	Akron	986,220
The B. F. Goodrich Co.	Singapore	Seattle	Akron	1,778,580
Dunlop Tire & Rubber Goods Co., Limited	Singapore	Seattle	Vancouver	27,180
The Goodyear Tire & Rubber Co.	Singapore	Seattle	Toronto	60,120
Various	Singapore	Seattle	Toronto	114,120
Total				5,114,020
MARCH 5, 1919, S. S. *Suwa Maru.*				
L. Littlejohn & Co., Inc.	Colombo	Seattle	Seattle	151,200
Various	Colombo	Seattle	Seattle	212,220
Total				363,420
MARCH 5, 1919, S. S. *Kanagawa Maru.*				
Raw Products Co	Colombo	Seattle	Seattle	1,400
MARCH 7, 1919, S. S. *Grotius.*				
Robinson & Co.	Singapore	San Francisco		89,640
The Goodyear Tire & Rubber Co.	Batavia	San Francisco		468,180
Total				557,820
PONTIANAK.				
FEBRUARY 24, 1919, S. S. *Oridono Maru.*				
L. Littlejohn & Co., Inc.	Singapore	Seattle	Seattle	282,420
Various	Singapore	Seattle	Seattle	136,260
Total				418,680
MARCH 5, 1919, S. S. *Cyclops.*				
Malaysian Rubber Co.	Singapore	Seattle	New York	216,000
L. Littlejohn & Co., Inc.	Singapore	Seattle	Seattle	104,040
Total				320,040
GUTTA SIAK.				
FEBRUARY 24, 1919, S. S. *Oridono Maru.*				
Paterson, Simons & Co.	Singapore	Seattle	Seattle	15,300
MARCH 5, 1919, S. S. *Cyclops.* [Gutta siak and kataiu (42,660).]				
Malaysian Rubber Co.	Singapore	Seattle	New York	74,160
MARCH 7, 1919, S. S. *Grotius.*				
L. Littlejohn & Co., Inc.	Singapore	San Francisco		91,800

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

	Month Ended January 31.			
	1918.		1919.	
UNMANUFACTURED—	POUNDS.	VALUE.	POUNDS.	VALUE.
Crude rubber: From—				
Dutch East Indies	751,000	£92,112	190,200	£22,511
French West Africa	18,400	1,251	.....	.....
Gold Coast	8,000	601	14,400	1,601
Other African countries	211,400	21,013	537,500	56,982
Peru	600	61	1,700	245
Brazil	2,460,600	298,547	1,820,600	213,843
British India	850,600	110,407	1,932,300	219,962
Straits Settlements and dependencies, including Labuan	3,150,200	380,171	3,493,000	381,295
Federated Malay States	2,972,800	367,951	3,032,100	357,666
Ceylon and dependencies	6,839,500	808,833	2,603,500	304,272
Other countries	421,500	50,785	282,700	31,062
Totals	17,684,600	£2,131,732	13,908,000	£1,589,439
Waste and reclaimed rubber	78,800	700	903	34
Totals	17,763,400	£2,132,432	13,908,903	£1,589,473
Gutta percha	1,017,000	185,631	2,496,900	489,752
MANUFACTURED—				
Boots and shoes—*dozen pairs*	2,177	£12,808	311	£1,456
Waterproofed clothing	.....	63	.....	.....
Automobile tires and tubes	.....	53,140	.....	14,262
Motorcycle tires and tubes	.....	.....	.....	1,187
Bicycle tires and tubes	.....	4,242	.....	475
Insulated wire	.....	315	.....	.....
Totals	.....	£71,626	.....	£17,380
EXPORTS.				
UNMANUFACTURED—				
Waste and reclaimed rubber	778,300	£20,626	316,100	£7,441
MANUFACTURED—				
Waterproofed clothing	.....	£50,780	.....	£70,141
Boots and shoes—*dozen pairs*	10,238	11,933	17,513	24,902
Insulated wire	.....	6,610	.....	19,322
Submarine cables	.....	17,069	.....	21,531
Carriage tires and tubes	.....	11,319	.....	23,130
Automobile tires and tubes	.....	63,160	.....	223,271
Motorcycle tires and tubes	.....	8,221	.....	9,811
Bicycle tires and tubes	.....	18,676	.....	31,202
Other rubber manufactures	.....	138,059	.....	240,055
Totals	.....	£325,837	.....	£663,365
EXPORTS—COLONIAL AND FOREIGN.				
UNMANUFACTURED—				
Crude rubber:				
To France	1,739,500	£236,166	2,324,100	£266,052
Italy	947,800	117,470	1,853,900	208,874
United States	271,300	30,234	21,300	2,724
Other countries	190,500	27,620	229,000	30,533
Totals	3,149,100	£411,490	4,428,300	£508,183
Waste and reclaimed rubber	22,300	676	3,300	125
Totals	3,171,400	£412,166	4,431,600	£508,308
Gutta percha	3,600	882	1,000	225
MANUFACTURED—				
Boots and shoes—*dozen pairs*	23	£97	1,297	£2,268
Waterproofed clothing	.....	11	.....	.....
Insulated wire	.....	25	.....	280
Automobile tires and tubes	.....	9,666	.....	16,448
Motorcycle tires and tubes	.....	.....	.....	627
Bicycle tires and tubes	.....	98	.....	.....
Totals	.....	£9,897	.....	£19,623

LONDON AND LIVERPOOL RUBBER STATISTICS.

IMPORTS.

	January.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
At London	5,121,500	£615,739	9,052,000	£1,029,405
Liverpool	11,822,500	1,419,545	3,977,400	462,868
Totals	16,944,000	£2,035,284	13,029,400	£1,492,273
Waste and reclaimed rubber:				
At London	9,700	100	.....	.....
Liverpool	67,800	778	.....	.....
Totals	77,500	£878	.....	.....
EXPORTS.				
Waste and reclaimed rubber:				
From London	198,900	£3,088	272,800	£5,680
Liverpool	107,400	1,587	43,300	1,761
Totals	306,300	£4,675	316,100	£7,441
REEXPORTS.				
Crude rubber:				
From London	2,351,500	£308,261	3,889,300	£445,676
Liverpool	652,600	87,100	402,200	45,095
Totals	3,004,100	£395,361	4,291,500	£490,771
Waste and reclaimed rubber:				
From Liverpool	22,300	£676	3,300	£125

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Eleven Months Ended November 30.			
	1917.		1918.	
UNMANUFACTURED—	Quintals.[1]	Lire.[2]	Quintals.	Lire.
India rubber and gutta percha—				
raw and reclaimed:				
From Great Britain	10,999	.....	7,155	.....
India and Ceylon	15,502	.....	7,011	.....
Straits Settlements	6,806	.....	28,652	.....
French Africa	2,107	.....	5,844	.....
Belgian Congo	1,221	.....	251	.....
Brazil	19,393	.....	17,419	.....
Other countries	1,474	.....	2,961	.....
Totals	57,502	63,252,200	69,293	76,222,300
Rubber scrap	9,064	1,087,680	2,379	285,480

[1] A quintal = 220.46 pounds.
[2] A lira = $0.193.

	Eleven Months Ended November 30.			
	1917.		1918.	
MANUFACTURED—	Quintals.[1]	Lire.[2]	Quintals.	Lire.
India rubber and gutta percha—				
Threads	371	816,200	599	1,317,800
Sheets:				
Cut sheets	17	37,400	2	4,400
Elastic fabric	32	22,400	.....	.....
Other kinds, including hard rubber	171	205,200	298	357,690
MANUFACTURED—				
Tubes:				
From cut sheets	1	2,200	4	8,800
Elastic fabric	61	54,900	105	94,500
Other forms	6	6,600	2	2,200
Belting	452	497,200	512	563,200
Rubber coated fabrics—*pieces:*				
For carding combs	417	542,100	241	313,300
Other forms	163	244,500	9	13,500
Boots and shoes—*pairs:*				
From France	6,046		27,566	
United States	23,499	356,604	3,472	378,120
Other countries	172		472	
Elastic webbing	275	550,000	194	388,000
Clothing and article for travel	8	24,000	15	45,000
Manufactures n. e. s.:				
From cut sheets	54	140,400	28	72,800
Elastic fabric	1,092	1,310,400	1,527	1,832,400
Tires and tubes:				
From France	3,848		2,408	
Great Britain	1,933	10,627,200	446	5,139,000
Other countries	123		1	
Other rubber manufactures:				
From France	848		1,972	
Great Britain	1,749		3,231	
United States	2,210	5,774,400	223	6,513,600
Other countries	5		2	
Totals, manufactured	.....	21,211,704	.....	17,034,220
Totals, imports	.....	85,551,584	.....	93,542,000

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Eleven Months Ended November 30.			
	1917.		1918.	
UNMANUFACTURED—	Quintals.[1]	Lire.[2]	Quintals.	Lire.
India rubber and gutta percha—raw and reclaimed:				
To Spain	1,548	.....	1,394	.....
United States	2,717	.....	1,334	.....
Totals	.....	1,492,750	.....	884,800
MANUFACTURED—				
India rubber and gutta percha—				
Threads	218	479,600	76	167,200
Sheets:				
Cut sheets	6	12,000	21	42,000
Elastic fabric	31	24,800	23	18,400
Insulated wire	2	1,000	3	1,500
Other forms including hard rubber	83	83,000	41	41,000
Tubes:				
From cut sheets	6	13,200	19	41,800
Elastic fabric	280	224,000	211	168,800
Other forms	287	272,650	136	129,200
Belting	12	12,000	87	87,000
Rubber coated fabrics—*pieces*	190	228,000	46	55,200
Elastic webbing	1,860	3,534,000	1,024	1,945,600
Clothing and articles for travel	34	22,400	8	95,000
Manufactures n. e. s.				
From cut sheets	65	143,000	73	166,600
Elastic fabric	137	150,700	127	139,700
Tires and tubes:				
To France	2,930	.....	2,939	.....
Great Britain	7,051	.....	2,001	.....
Spain	127	.....	82	.....
Switzerland	11	.....	2	.....
India and Ceylon	1,679	.....	579	.....
Dutch East Indies	350	.....	607	.....
Straits Settlements	1,535	.....	235	.....
Australia	131	.....	95	.....
Argentina	1,161	.....	221	.....
Brazil	1,120	.....	529	.....
Other countries	998	.....	650	.....
Totals, tires	17,353	22,558,900	7,974	10,322,000
Other rubber manufactures:				
To France	194	.....	295	.....
Great Britain	167	.....	119	.....
Spain	34	.....	12	.....
Switzerland	208	.....	154	.....
Egypt	15	.....	31	.....
Argentina	392	.....	140	.....
Brazil	154	.....	68	.....
Uruguay	71	.....	9	.....
Other countries	150	.....	159	.....
Totals	1,385	30,709,800	987	15,214,200
Total exports	.....	59,961,800	.....	29,514,000

[1] A quintal = 220.46 pounds.
[2] A lira = $0.193.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	December.			
	1917.		1918.	
UNMANUFACTURED—*free:*	Pounds.	Value.	Pounds.	Value.
India rubber:				
From France	46,259	$21,049	.....	.....
Portugal	15,843	11,665	.....	.....
United Kingdom	784,770	452,041	30	$30
Canada	.....	.....	12,424	3,541
Central America	51,278	16,693	13,983	4,553
Mexico	54,749	28,136	110,000	35,300
Brazil	3,675,945	1,339,659	5,582,432	1,776,418
Peru	21,798	11,111	152,000	49,390
Other South America	782,613	315,329	508,579	222,484
British East Indies	15,619,046	8,776,976	7,510,889	2,749,152
Dutch East Indies	2,243,654	1,352,607	582,533	191,609
Other countries	15,792	6,601	54,071	20,142
Totals	23,311,747	$12,331,867	14,526,941	$5,052,619
Balata	127,524	64,622	59,216	41,093
Guayule	404,539	174,156	190,350	76,140
Jelutong (Pontianak)	781,546	31,442	.....	.....
Gutta percha	14,161	1,988	.....	.....
Totals	1,327,770	$272,208	249,566	$117,233
Rubber scrap	758,098	53,941	1,128,397	93,315
Totals, unmanufactured	25,397,615	$12,658,016	15,904,904	$5,263,167
Chicle	723,827	400,269	714,540	387,424
MANUFACTURED—*dutiable:*				
India rubber and gutta percha	.....	35,831	.....	16,277
India rubber substitutes	.....	6,404	112,000	15,882

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires[1]	.....	$1,419,926	.....	$1,281,534
All other tires[1]	.....	201,431	.....	66,400
Scrap and old	333,144	50,856	460,134	47,244
Reclaimed rubber	558,716	99,591	351,990	58,995
Belting, hose and packing[1]	.....	410,144	.....	412,803
Rubber boots[1] .....*pairs*	255,109	782,046	26,870	117,173
Rubber shoes[1] .....*pairs*	138,963	104,662	66,502	53,024
Druggists' rubber sundries[1]	.....	100,012	.....	58,152
Insulated wire and cables[1]	.....	676,651	.....	465,688
Other rubber manufactures[1]	.....	895,856	.....	588,119
Totals, manufactured	.....	$4,741,175	.....	$3,149,132
Fountain pens .....*number*	57,923	37,674	8,883	6,207

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	1,058,553	$557,638	52,498	$20,610
Balata	53,412	30,772	60,480	36,180
Guayule	8,935	2,770	.....	.....
Jelutong (Pontianak)	575	89	.....	.....
Gutta percha	22,400	6,720	180	72
Totals, unmanufactured	1,153,875	$597,989	113,158	$56,862
MANUFACTURED—				
India rubber	.....	$620	.....	$1,658
Gutta percha	.....	6,094	.....	.....
Rubber substitutes, elasticon, etc.	.....	130	672,000	45,360
Totals, manufactured	.....	$6,844	672,000	$47,018

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose and packing	.....	$1,529	.....	$3,024
Boots and shoes.....*pairs*	3,695	5,854	2,418	5,658
Other rubber goods	.....	1,646	.....	1,788
Totals	.....	$9,029	.....	$10,470
To Hawaii:				
Belting, hose and packing	.....	$13,235	.....	$10,934
Automobile tires	.....	70,080	.....	67,575
Other tires	.....	4,107	.....	2,497
Other rubber goods	.....	23,134	.....	9,653
Totals	.....	$110,556	.....	$90,659
To Philippine Islands:				
Belting, hose and packing	.....	$10,850	.....	$34,960
Boots and shoes.....*pairs*	29,090	20,906	.....	.....
Tires	.....	128,641	.....	37,394
Other rubber goods	.....	17,965	.....	14,525
Totals	.....	$178,362	.....	$86,879
To Porto Rico:				
Belting, hose and packing	.....	$1,724	.....	$4,781
Automobile tires	.....	41,817	.....	17,084
Other tires	.....	1,117	.....	9
Other rubber goods	.....	9,407	.....	9,109
Totals	.....	$54,065	.....	$30,983

[1] Details of exports of domestic merchandise by countries during December, 1918, were given in THE INDIA RUBBER WORLD, March 1, 1919, page 338.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES DURING THE MONTH OF JANUARY, 1919. (BY COUNTRIES.)

EXPORTED TO—	Belting, Hose and Packing.	Boots.		Shoes.		Druggists' Rubber Sundries.	Tires.		Insulated Wire and Cable.	All Other Manufactures.	Total.
EUROPE:	Value.	Pairs.	Value.	Pairs.	Value.	Value.	For Automobiles. Value.	All Others. Value.	Value.	Value.	Value.
Denmark	.....	.....	.....	.....	.....	$31	.....	$3,644	$27,811	$1,967	$33,453
France	.....	.....	.....	.....	.....	.....	$237	.....	4,652	19,675	24,564
Greece	.....	.....	.....	10	$15	.....	.....	.....	4,946	2,083	7,044
Iceland and Faroe Islands	.....	.....	.....	10	12	.....	.....	.....	235	881	1,128
Italy	$1,095	.....	.....	.....	.....	.....	.....	.....	4,500	10,114	15,709
Netherlands	.....	.....	.....	.....	.....	.....	.....	.....	50	.....	50
Norway	1,332	1,380	$5,582	10,100	8,816	.....	19,859	1,639	26,727	1,306	65,261
Portugal	.....	.....	.....	6	8	.....	6,120	.....	28,051	136	34,315
Spain	.....	.....	.....	.....	.....	349	3,310	.....	23,667	2,194	29,520
Sweden	.....	.....	.....	.....	.....	.....	.....	.....	.....	427	427
Switzerland	.....	.....	.....	.....	.....	.....	.....	.....	.....	203	203
England	38,729	1,458	3,067	22,978	11,976	6,057	.....	2,532	21,606	126,666	210,633
Scotland	.....	.....	.....	2,300	1,702	.....	.....	.....	.....	.....	1,702
TOTALS, EUROPE	$41,156	2,838	$8,649	35,404	$22,529	$6,437	$29,526	$7,815	$142,245	$165,652	$424,009
NORTH AMERICA:											
Bermuda	$494	.....	.....	24	$15	$301	.....	$278	$2,632	$222	$3,942
British Honduras	5	.....	.....	510	653	14	.....	.....	3	12	687
Canada	44,992	2,678	$9,178	14,456	17,706	25,696	69,672	6,128	17,938	157,313	348,623
Costa Rica	720	.....	.....	.....	.....	32	1,294	7	772	157	2,982
Gautemala	264	.....	.....	.....	.....	1,532	8,848	59	926	508	12,137
Honduras	590	.....	.....	1,242	1,493	239	4,689	2,690	347	540	10,588
Nicaragua	1,596	4	18	74	107	241	573	23	.....	2,269	4,827
Panama	10,653	.....	.....	.....	.....	498	16,768	455	3,212	5,269	36,855
Salvador	1,352	.....	.....	48	50	51	11,707	1,315	47	2,083	16,605
Mexico	56,974	13	79	489	725	4,978	84,945	5,765	44,493	20,115	218,074
Miquelon, Langley, etc	.....	216	584	297	266	.....	.....	.....	.....	.....	850
Newfoundland and Labrador	1,808	1,956	6,224	1,063	634	149	13	42	258	311	9,439
Barbados	582	.....	.....	7	5	71	9,082	3,104	1,170	439	14,453
Jamaica	168	.....	.....	24	36	72	14,063	247	652	488	15,726
Trinidad and Tobago	596	.....	.....	24	13	13	8,263	276	464	497	10,122
Other British West Indies	258	.....	.....	718	719	225	7,199	2,296	24	618	11,334
Cuba	38,236	4	12	19,086	10,784	10,245	162,535	2,724	69,053	46,566	340,155
Danish West Indies	71	.....	.....	.....	.....	.....	184	118	142	108	623
Dutch West Indies	235	.....	.....	.....	.....	60	985	.....	50	46	1,376
French West Indies	903	.....	.....	84	122	.....	17,838	4,762	132	339	24,096
Haiti	203	.....	.....	210	306	11	2,290	54	185	1,275	4,324
Dominican Republic	1,809	12	30	.....	.....	106	7,713	995	124	1,431	12,208
TOTALS, NORTH AMERICA	$162,504	4,883	$16,125	38,356	$33,634	$44,534	$428,661	$31,338	$142,624	$240,606	$1,100,026
SOUTH AMERICA:											
Argentina	$70,158	16	$76	18	$24	$7,409	$271,489	$6,191	$71,997	$39,624	$466,968
Bolivia	11,852	.....	.....	.....	.....	.....	2,766	.....	964	148	15,730
Brazil	58,940	109	599	11,205	10,370	4,415	158,656	6,432	109,722	36,048	385,182
Chile	35,413	.....	.....	758	392	2,536	145,253	1,872	25,584	10,515	221,565
Colombia	1,905	.....	.....	713	718	216	11,902	1,976	4,851	1,969	23,537
Ecuador	734	.....	.....	72	41	291	11,057	489	2,955	372	15,939
British Guiana	1,175	.....	.....	48	50	224	7,985	2,035	578	293	12,340
Dutch Guiana	329	.....	.....	.....	.....	420	1,069	.....	.....	42	1,860
French Guiana	.....	.....	.....	.....	.....	.....	11	.....	.....	3	14
Paraguay	1,618	.....	.....	.....	.....	175	.....	.....	.....	100	1,893
Peru	13,605	567	3,412	72	34	351	16,114	63	5,957	4,928	44,464
Uruguay	21,262	.....	.....	337	269	2,539	102,791	101	41,170	20,754	188,886
Venezuela	665	.....	.....	.....	.....	312	13,808	108	2,777	1,694	19,364
TOTALS, SOUTH AMERICA	$217,656	692	$4,087	13,223	$11,898	$18,888	$742,901	$19,267	$266,555	$116,490	$1,397,742
ASIA:											
China	$10,725	48	$101	714	$683	$2,230	$11,945	$28	$876	$11,870	38,458
Japanese China	.....	.....	.....	1,477	1,926	30	.....	.....	.....	.....	1,956
Chosen	133	48	314	144	122	.....	1,627	.....	.....	464	2,550
British India	13,741	.....	.....	116	123	909	8,181	.....	224	6,236	29,414
Straits Settlements	3,409	.....	.....	106	141	246	19,207	247	61	1,468	24,779
Other British East Indies	.....	.....	.....	200	100	25	169	.....	50	4	348
Dutch East Indies	1,598	.....	.....	368	515	58	24,518	633	34,709	2,494	64,525
French East Indies	3,131	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,131
Honkkong	4,226	.....	.....	403	321	486	18,334	237	50	1,355	25,009
Japan	10,815	1,634	5,237	9,423	10,321	216	12,958	88	5,475	12,273	57,383
Russia in Asia	.....	3	9	.....	.....	.....	.....	.....	.....	1	10
Siam	140	.....	.....	.....	.....	175	.....	.....	.....	178	493
TOTALS, ASIA	$47,918	1,733	$5,651	12,951	$14,252	$4,375	$96,939	$1,233	$41,445	$36,343	$248,156
OCEANIA:											
Australia	$48,406	150	$330	9,337	$5,157	$8,315	$103,132	$3,345	$56,318	$36,588	$261,591
New Zealand	4,781	383	1,205	5,316	4,614	404	35,338	3,066	2,128	7,363	58,899
Other British Oceania	.....	.....	.....	400	781	144	208	29	278	27	1,467
French Oceania	1,325	.....	.....	796	953	35	487	171	170	381	3,522
German Oceania	.....	.....	.....	.....	.....	.....	125	24	.....	.....	149
Philippine Islands	34,272	.....	.....	7,651	5,391	3,833	287,525	32,527	51,094	59,759	474,401
TOTALS, OCEANIA	$88,784	533	$1,535	23,500	$16,896	$12,731	$426,815	$39,162	$109,988	$104,118	$800,029
AFRICA:											
Belgian Congo	.....	.....	.....	.....	.....	.....	.....	.....	.....	$153	$153
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	$390	.....	390
British South Africa	$59,092	335	$1,269	7,073	4,993	1,253	111,234	6,688	101,234	19,866	305,631
British East Africa	21	.....	.....	.....	.....	.....	2,441	.....	.....	696	3,158
French Africa	.....	.....	.....	.....	.....	.....	1,102	.....	.....	.....	1,102
Liberia	.....	.....	.....	6	13	7	.....	.....	.....	.....	20
Portuguese Africa	6,505	.....	.....	.....	.....	234	.....	.....	.....	309	7,048
TOTALS, AFRICA	$65,618	335	$1,269	7,079	$5,008	$1,494	$114,777	$6,688	$101,624	$21,024	$317,502
TOTALS	$623,636	11,014	$37,316	130,513	$104,217	$88,459	$1,839,619	$105,503	$804,481	$684,233	$4,287,464

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AMERICAN cotton has been in steady demand, both here and abroad. Middling uplands spot cotton advanced from 26.10 cents on March 1, to 28.70 cents March 17, when the market declined, and 27.40 cents was quoted on March 26. The unsettled European situation and heavy liquidations were the causes of the decline.

The Government reports 12,022,601 equivalent 500-pound bales of ginned cotton for 1918, compared with 11,302,375 bales for 1917, and 11,449,930 bales for 1916. Included in the 1918 figures were 35,511 bales of American Egyptian cotton and 51,389 bales of Sea Island, compared with 92,501 bales last year.

Egyptian Cotton.—The market has not yet returned to a normal condition; few sales were reported, and quotations are therefore largely nominal. A large consignment of Egyptian was due to arrive late last month.

Sea Island Cotton.—The Southern markets have been fairly active, but holders were not disposed to accept present prices for large quantities.

Sheetings, Ducks, Drills and Osnaburgs.—While the market has not yet recovered from the effects of government regulation, the general situation is constantly improving; all quotations, however, are nominal.

Raincoat Fabrics.—There was a decided improvement last month in the cotton piece goods trade, and prices show a slight advance over last month's quotations.

Tire Fabrics.—Some activity was reported in this market, being particularly noticeable later in the month. From the inquiries received and the orders placed, it would appear that manufacturers are now planning for increased tire production.

NEW YORK QUOTATIONS.

March 26, 1919.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:			
Wamsutta, S. A. I. L., No. 1, 40-inch	*yard*	.60	@
No. 4, 38½-inch		.50	@
ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	*lb.*	*.85	@
2¼ lbs. sq. yd., brass or copper insertion	*lb.*	*.90	@
BURLAPS:			
32—7-ounce	100 *yards*	6.25	@
32—8-ounce		6.60	@
40—7½-ounce		7.25	@
40—8-ounce		7.40	@
40—10-ounce		10.75	@
40—10½-ounce		11.00	@
45— 7½-ounce		None	
45— 8-ounce		9.50	@
45— 9½-ounce		None	
48—10-ounce		15.75	@
DRILLS:			
38-inch 2.00-yard	*yard*	*.24½	@
40-inch 2.47-yard		*.23	@
52-inch 1.90-yard		*.28½	@
52-inch 1.95-yard		*.27¾	@
60-inch 1.52-yard		*.35⅛	@
DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	*yard*	*.27½	@
38-inch 1.74-yard		*.31⅜	@
72-inch 16.66-ounce		*.57¼	@
72-inch 17.21-ounce		*.60¼	@
MECHANICAL			
Hose	*pound*	*.62¾	@
40-inch, 10-ounce		*.64¾	@
Belting		*.62¾	@
HOLLANDS, 40-INCH:			
Acme	*yard*	.26	@
Endurance	*yard*	.28	@
Penn	*yard*	.30	@
OSNABURGS:			
40-inch 2.35-yard	*yard*	*.23¼	@
46-inch 2.48-yard		*.22⅜	@
37½-inch 2.42-yard		*.23¼	@
RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60 water-repellent	*yard*	.13½	@
60 x 48 not water-repellant		.12½	@
Cashmeres, cotton and wool, 36-inch, tan		.80	@
cotton and wool, 36-inch plain		.33½	@
Oxford		.65	@
blue and black		.75	@
Twills 64 x 72		.30	@ .32½
64 x 102		.35	@ .40
Twill, mercerized, 36-inch, tan and olive		.25½	@
blue and black		.27½	@ .28¼
Tweed		.55	@ .72
printed		.16	@ .22
Plaids 60 x 48		.13½	@
56 x 44		.12¾	@
Repp		.36½	@ .43
Surface prints 60 x 48		.14	@
64 x 60		.15¼	@
IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING —PLAIN AND FANCIES:			
63-inch, 3½ to 7½ ounces	*yard*	1.15	@ 3.15
36-inch, 2¾ to 5 ounces		.70	@ 1.80
IMPORTED PLAID LINING (UNION AND COTTON):			
63-inch, 2 to 4 ounces	*yard*	.85	@ 1.75
36-inch, 2 to 4 ounces		.50	@ 1.00
DOMESTIC WORSTED FABRICS:			
36-inch, 4½ to 8 ounces	*yard*	.55	@ 1.15
DOMESTIC WOVEN PLAID LININGS (COTTON):			
36-inch, 3¾ to 5 ounces	*yard*	.17	@ .30
SHEETINGS:			
JACKET:			
Delaware	*yard*	.23	@
Schuylkill	*yard*	.26	@

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

SILKS:			
Canton, 38-inch	yard	.35	@
Schappe, 36-inch		.52½	@
TIRE FABRICS:			
17¼-ounce Sea Island, combed	square yard	1.40	@
17¼-ounce Egyptian, combed		1.25	@
17¼-ounce Egyptian, carded		1.20	@
17¼-ounce Peelers, combed		1.08	@
17¼-ounce Peelers, carded		.85	@

*Nominal.

THE MARKET FOR CHEMICAL AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE pig lead producers have made a radical cut in the price of the metal to the level at which a demand was created and lead is now selling on an advancing market. The strength shown in the lead market was reflected in that for spelter early in the month. During most of the last month the market in both lead and zinc has been dull and weak.

In general the market for compounding ingredients has not materially changed.

ANILINE. There has been a fairly active and steady demand, with prices declining from 24 to 23 cents per pound.

DRY COLORS. The demand has been very moderate. A marked tendency has been noted to make price reductions.

BARYTES. Toward the last of the month a better tone has prevailed, with some strengthening of price.

BENZOL. The demand has been light and prices have fallen off to 18 cents per gallon.

CARBON TETRACHLORIDE. Although the market has been dull and weak there has been no decline in price.

LITHOPONE. The cut in price early last month stimulated a demand which has held up fairly well. The bottom figure seems to have been 7 cents per pound in carload lots.

LITHARGE. The market has remained quiet, the price averaging 10 cents per pound.

SUBLIMED LEAD. The market has been inactive at 8¼ to 8½ cents per pound

WHITING. The market has been featureless, with moderate, steady demand.

ZINC OXIDE. The market has shown an improved and steady demand. Prices are about to be announced for the coming quarter A new process zinc oxide is now being offered to the trade.

NEW YORK QUOTATIONS.

MARCH 26, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.				
Accelerator N. C. C.	lb.	.50	@	
Accelerene	lb.	3.70	@	
Accelemal	lb.	.65	@	
Aluchyde ammonia crystals	lb.	1.00	@	1.25
Aniline oil	lb.	.24	@	
Excellerex	lb.	*.85	@	
Hexamethylene tetramine (powdered)	lb.	1.15	@	1.25
Paraphenylenediamine	lb.	3.50	@	
Tensolite	lb.	*.50	@	
Thiocarbanilide	lb.	.50	@	.60
Velocite	lb.	*.60	@	
ACCELERATORS, INORGANIC.				
Lead, dry red (bbls.)	lb.	.10¼	@	
sublimed blue (bbls.)	lb.	.08¼	@	
sublimed white (bbls.)	lb.	.08¼	@	
white, basic carbonate (bbls.)	lb.	.09	@	
Lead, oleate	lb.	*.27	@	
Lime, flour	lb.	.02	@	.02½
Litharge, domestic	lb.	.09½	@	.09¾
imported	lb.	.12	@	.12½
sublimed	lb.	.10	@	
Magnesium, carbonate	lb.	.12	@	
Diatomite	lb.	.03	@	
calcined heavy (Thistle)	lb.	.11	@	
light (Manhattan)	lb.	.35	@	
Magnesium oxide, extra light	lb.	.65	@	
medium light	lb.	.30	@	
Magnesite, calcined, powdered	ton	50.00	@	65.00
ACIDS.				
Acetic, 28 per cent (bbls.)	lb.	.03½	@	
Crecylic (97% straw color)	gal.	1.02	@	1.07
(95% dark)	gal.	.97	@	1.02
Glacial, 99 per cent (carboys)	lb.	.14¼	@	
Muriatic, 20 degrees	cwt.	1.60	@	1.90
Nitric, 36 degrees	lb.	.06½	@	
Sulphuric, 66 degrees	ton	17.00	@	25.00
ALKALIES.				
Caustic soda, 76 per cent (bbls.)	lb.	.07	@	
Soda ash (bbls.)	lb.	.04	@	
COLORS.				
Black:				
Bone, powdered	lb.	.05	@	
granulated	lb.	.09	@	
Carbon, black (sacks, factory)	lb.	.15	@	.25
Drop	lb.	.06½	@	
Ivory black	lb.	.16	@	.30
Lampblack	lb.	.15	@	
Oil soluble aniline	lb.	.95	@	
Rubber black	lb.	.07	@	
Blue:				
Cobalt	lb.	.25	@	.35
Prussian	lb.	1.10	@	
Ultramarine	lb.	.18	@	.50
Brown:				
Iron oxide	lb.	.04	@	
Ochre, domestic	lb.	*.02	@	.04
imported	lb.	*.05½	@	.08
Sienna, Italian, raw and burnt	lb.	.07	@	.15
Umber, Turkey, raw and burnt	lb.	.06	@	
Green:				
Chrome tile	lb.	.16	@	
Oxide of chromium (casks)	lb.	.75	@	
Red:				
Antimony, crimson, sulphuret of (casks)	lb.	.50	@	
crimson, "Mephisto" (casks)	lb.	*.55	@	
Antimony, golden sulphuret of (casks)	lb.	.25	@	
golden, "Mephisto" (casks)	lb.	*.28	@	
golden sulphuret (States)	lb.	.28	@	
red sulphuret (States)	lb.	.25	@	
vermilion sulphuret	lb.	.55	@	
Arsenic, red sulphide	lb.	.30	@	
Indian, pure bright	lb.	.09	@	
Iron oxide, reduced grades	lb.	.12	@	
pure bright	lb.	.16	@	
Oil soluble aniline, red	lb.	2.00	@	
orange	lb.	1.25	@	
Oximony	lb.	.18	@	
Venetian	lb.	.02½	@	
Vermilion, English, pale, medium, dark	lb.	1.40	@	
White:				
Aluminum bronze powder	lb.	.60	@	
C. P. (cases)	lb.	.69½	@	
superior	lb.	.75	@	
Lithopone, imported	lb.	None		
domestic	lb.	.07	@	.07¼
Ponolith (carloads, factory)	lb.	*.06⅞	@	.07
(less carloads, factory)	lb.	*.07¼	@	
Rubber-makers' white	lb.	.07	@	.07¼
Zinc oxide, Horschead (less carload, factory):				
"XX red"	lb.	*.10¼	@	
"Special"	lb.	*.10¾	@	
French process, red seal	lb.	*.12¼	@	
green seal	lb.	*.12¾	@	
white seal	lb.	*.13¼	@	
(States)	lb.	.09⅞	@	
Azo, ZZZ, lead free (less carload factory)	lb.	.10½	@	
ZZ, under 5% leaded (less carload factory)	lb.	.09¾	@	
Z, 8-10% leaded (less carload factory)	lb.	.09	@	
Zinc sulphide	lb.	.07	@	.07¼
Yellow:				
Cadmium, tri-sulphate	lb.	None		
sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chreme, light and medium	lb.	.30	@	
Ochre, light or dark	lb.	.03	@	.05
Oil soluble aniline	lb.	1.20	@	
Zinc chromate	lb.	*.55	@	
COMPOUNDING INGREDIENTS.				
Aluminum flake (bbls. factory. Less 5% carload)	ton	29.00	@	
(sacks factory. Less 5% carloads)	ton	26.00	@	
Aluminum oxide	lb.	*.18	@	
Ammonia carbonate, powdered	lb.	.14	@	.14¼
Asbestine (carloads)	ton	22.50	@	
Asbestos (bags)	ton	35.00	@	
Barium, carbonate, precipitated	ton	60.00	@	
sulphide, precipitated	lb.	.07	@	
Barytes, pure white	ton	33.00	@	35.00
off color	ton	23.00	@	25.00
uniform floated	ton	33.00	@	35.00
Basofor	lb.	.03½	@	
Blanc fixe	lb.	.04½	@	
Bone ash	lb.	.06	@	
Chalk, precipitated, extra light	lb.	.05	@	.05½
precipitated, heavy	lb.	.04	@	.04½
China clay, domestic	lb.	.15	@	.20
imported	lb.	.18	@	.25
Cork flour	lb.	.53	@	
Cotton linters, clean mill run, f. o. b. factory	bale	None		
Fossil flour (powdered)	ton	50.00	@	
(bolted)	ton	50.00	@	60.00
Glue, high grade	lb.	.35	@	.45
medium	lb.	.17	@	.35
low grade	lb.	.11	@	.15
Graphite, flake (400 pound bbl.)	lb.	.10	@	.25
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	ton	50.00	@	
(bolted)	ton	50.00	@	60.00
Mica, powdered	lb.	.03½	@	.05
Plaster of Paris	lb.	2.00	@	3.00

Pumice stone, powdered (bbl.)	lb.	.05	@	
Rotten stone, powdered	lb.	.02½	@	.04½
Rubber flux	lb.	*.15	@	
Rub-R-Glu	lb.	*.20	@	.25
Silex (silica)	ton	22.00	@	
Soapstone, powdered, domestic	ton	18.50	@	40.00
Starch, powdered corn (carload, bbls.)	cwt.	4.74	@	
(carload, bags)	cwt.	4.52	@	
Talc, American	ton	22.50	@	
French	ton	None		
Tripoli earth, powdered	lb.	.01½	@	
Tyre-lith	ton	80.00	@	
Whiting, Alba (carloads)	cwt.	.80	@	.90
commercial	cwt.	1.25	@	
gilders	cwt.	1.30	@	1.35
Paris, white, American	cwt.	1.50	@	1.75
English cliffstone	cwt.	1.75	@	2.75
Wood pulp, imported	lb.	.03½	@	
Wood flour, American	lb.	.01¾	@	

MINERAL RUBBER.

Gilsonite	ton	47.50	@	57.50
Genasco (carloads factory)	ton	55.00	@	
(less carloads factory)	ton	57.00	@	
M. R.	ton	*65.00	@	
M. R. X.	ton	100.00	@	
Liquid rubber	lb.	*.15	@	
Pioneer, carload, factory	ton	50.00	@	
less carload, factory	ton	55.00	@	
Richmond	ton	75.00	@	
No. 64	ton	45.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	55.00
Refined Elaterite	ton	175.00	@	
Raven M. R.	ton	40.00	@	60.00
Rubpron (carloads, factory)	ton	50.00	@	
(less car, factory)	ton	60.00	@	
Walpole rubber flux (factory)	lb.	175.00	@	

OILS.

Castor, No. 1, U. S. P.	lb.	.27	@	
No. 2, U. S. P.	lb.	None		
No. 2, U. S. P.	lb.	.24	@	
Corn, crude (bbls.)	lb.	.16	@	
refined Argo	cwt.	20.06	@	
Cotton	lb.	.21	@	
Glycerine (98 per cent)	lb.	.21	@	.27
Glycerole	lb.	.15	@	
Linseed, raw (carloads)	gal.	1.52	@	
Linseed compound	gal.	1.00	@	
Palm (Niger)	lb.	.20	@	
Peanut	gal.	1.50	@	
Petrolatum, O.	lb.	.08	@	
Petroleum grease	lb.	.06	@	
Pine, steam distilled	gal.	.70	@	
Pine tar	gal.	.38	@	
Rapeseed, refined	gal.	1.50	@	
blown	gal.	1.60	@	
Rosin	gal.	.80	@	
Soya bean	lb.	.13½	@	
Tar, commercial (cases)	gal.	.35	@	.36

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.18	@	
methyl (drums)	gal.	1.50	@	
Benzol, C. P. (drums)	gal.	.40	@	
90 per cent.	gal.	.22	@	.27
Beta-naphthol, resublimed	lb.	1.30	@	
ordinary grade	lb.	.55	@	
Carbon bisulphide (drums)	lb.	.06½	@	
tetrachloride (drums)	lb.	.15½	@	
Naphtha, motor gasoline (steel bbls.)	gal.	.24½	@	
73 @ 76 degrees (steel bbls.)	gal.	None		
68 @ 70 degrees (steel bbls.)	gal.	None		
Solvent	gal.	.20	@	
V. M. & P. (steel bbls.)	gal.	.23½	@	
Toluol, pure	gal.	.25	@	.35
Turpentine, spirits	gal.	.70	@	.71
wood	gal.	.61	@	.64
Osmaco reducer	gal.	.32	@	
Xylol, pure	gal.	.45	@	.50
commercial	gal.	.35	@	

SUBSTITUTES.

Black	lb.	.17	@	.24
White	lb.	.13	@	.24
Brown	lb.	.10	@	.16
Brown factice	lb.	.07½	@	.23
White factice	lb.	.12	@	.23
Paragol soft and medium (carloads)	cwt.	17.08	@	
hard	cwt.	16.58	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.39	@	
Orange mineral, domestic	lb.	.13½	@	
Sulphur chloride (drums)	lb.	.06	@	.07
Sulphur, flour, Brooklyn brand (carloads)	cwt.	2.95	@	
pure soft (carloads)	cwt.	2.90	@	
superfine (carloads, factory)	cwt.	2.50	@	

(See also Colors—Antimony)

RESINS AND PITCHES.

Cantella gum	lb.	.65	@	
Pine tar, retort	bbl.	14.00	@	
kiln	bbl.	13.00	@	
Pitch, Burgundy	lb.	.07½	@	
coal tar	lb.	.01	@	
pine tar	lb.	.04¼	@	
ponto	lb.	.14	@	
Resin, Pontianak, refined	lb.	None		
granulated	lb.	None		
fused	lb.	None		
Rosin, K	lb.	.07	@	
powdered	lb.	.17	@	
Shellac, fine orange	lb.	.56½	@	.60
Tar, kiln	bbl.	12.50	@	
retort	bbl.	13.50	@	

WAXES.

Wax, beeswax, white	lb.	.66	@	.76
ceresin, white	lb.	.16½	@	.17
carnauba	lb.	.45	@	.82
ozokerite, black	lb.	.60	@	
green	lb.	.80	@	
montan	lb.	.35	@	
substitute	lb.	.22	@	.32
paraffin, refined 118/120 m. p. (cases)	lb.	.11	@	
128/120 m. p. (cases)	lb.	.12	@	

*Nominal.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

DURING the past month there has been no activity in the market for scrap rubber. The stagnant condition for both scrap and reclaimed rubber is attributed to the low level of crude rubber and also to the lack of demand for mechanical goods by such large consumers as the railroads. The latter factor is regarded as soon to be eliminated in considerable degree when consuming demand revives under the process of readjustment.

The reclaimers at present are operating their plants at less than half capacity and naturally are unresponsive to all scrap offers, particularly in view of the fact that the spring collections are expected to be larger than usual and still further depress prices.

Scrap dealers are facing a perplexing situation with no immediate relief in the way of improved conditions. Their available propositions are described as of the "starvation" variety.

BOOTS AND SHOES. Very little has been done. March average prices have averaged 7⅝ cents.

INNER TUBES. Practically no demand. Prices nominal.

MECHANICALS. No improvement can be noted and prices tend downward.

TIRES. The demand is insignificant even at reduced prices.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

MARCH 26, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:

Arctic tops	lb.	.01¼	@	.01½
Boots and shoes	lb.	.07½	@	.07¾
Trimmed arctics	lb.	.06	@	.06¼
Untrimmed arctics	lb.	.05	@	.05¼

HARD RUBBER:

Battery jars, black compound	lb.	*.01	@	
No. 1, bright fracture	lb.	.24	@	.25

INNER TUBES:

No. 1, old packing	lb.	.20	@	.21
new packing	lb.	.24	@	.25
No. 2	lb.	.10½	@	.10¾
Red	lb.	.10½	@	.10¾

MECHANICALS:

Black scrap, mixed, No. 1	lb.	.04¼	@	.04½
No. 2	lb.	.03½	@	.03¾
Car springs	lb.	.04½	@	.04½
Heels	lb.	.03¼	@	.03½
Horse-shoe pads	lb.	.03¾	@	.04
Hose, air-brake	lb.	.04½	@	.04¾
fire, cotton lined	lb.	.01¾	@	.02
garden	lb.	.01½	@	.01¾
Insulated wire stripping, free from fiber	lb.	.03½	@	.04
Matting	lb.	.01½	@	
Packing	lb.	.01½	@	
Red scrap, No. 1	lb.	.09¼	@	.10
No. 2	lb.	.06¼	@	.07
White scrap, No. 1	lb.	.11¾	@	.12
No. 2	lb.	.09¼	@	.09¾

TIRES, PNEUMATIC:

PNEUMATIC:

Auto peelings, No. 1	lb.	.09¾	@	.10¼
No. 2	lb.	.06	@	.06½
Bicycle	lb.	.04½	@	.04½
Standard white auto	lb.	.05½	@	.05½
Standard mixed auto	lb.	.04¾	@	
Stripped, unguaranteed	lb.	.03¼	@	.03½
White, G & G., M. & W., and U. S.	lb.	.05¼	@	.05½

SOLID:

Carriage	lb.	.04¼	@	.04½
Irony	lb.	.01¼	@	.01½
Truck	lb.	.04¼	@	.04½

*Nominal.

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RUBBER PRODUCTION IN THE NETHERLANDS EAST INDIES.

The Department of Agriculture of the Netherlands India Government estimates that 193 rubber estates in Sumatra produced 51,553,550 pounds of rubber during 1918.